PREVALENCE OF LIFESTYLE RISK FACTORS IN NONCOMMUNICABLE DISEASES

Dissertation submitted for

M.D. DEGREE EXAMINATION

BRANCH VII- PAEDIATRIC MEDICINE

THE TAMILNADU Dr. M.G.R. MEDICAL UNIVERSITY

CHENNAI

APRIL 2013

INSTITUTE OF CHILD HEALTH AND

HOSPITAL FOR CHILDREN

MADRAS MEDICAL COLLEGE

CHENNAI

CERTIFICATE

This is to certify that the dissertation titled **"PREVALENCE OF LIFESTYLE RISK FACTORS IN NONCOMMUNICABLE DISEASES"** submitted by **Dr. P.KANIMOZHI.,** to the Faculty of Pediatrics, The Tamil Nadu Dr. M.G.R. Medical University, Chennai in partial fulfillment of the requirement for the award of M.D. Degree (Pediatrics) is a bonafide research work carried out by him under our direct supervision and guidance.

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I **Dr. P.KANIMOZHI**, solemnly declare that the dissertation titled **"PREVALENCE OF LIFESTYLE RISK FACTORS IN NONCOMMUNICABLE DISEASES"** has been prepared by me.

This is submitted to the Tamilnadu Dr.M.G.R. Medical University, Chennai in partial fulfillment of the rules and regulations for the M.D. Degree Examination in Paediatrics.

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SPECIAL ACKNOWLEDGEMENT

My sincere thanks to **Prof.V.KANAGASABAI, M.D.,** the Dean, Madras Medical college, for allowing me to do this dissertation and utilise the institutional facilities.

ACKNOWLEDGEMENT

It is with immense pleasure and privilege, I express my heartful gratitude, admiration and sincere thanks to **Prof.Dr.M.KANNAKI, M.D., DCH.,** Professor and Head Of the Department of Pediatrics, for her guidance and support during this study.

I am greatly indebted to my guide and teacher, **Prof. Dr.C.SUBBULAKSHMI, MD., DCH.,** professor of Paediatrics for his supervision, guidance and encouragement while undertaking this study.

I would like to give special thanks to my former unit chief **Dr.V.SEETHA, MD., DCH**., who guided me to a great extent.

I express my sincere thanks and gratitude to **Prof.Dr.K.NEDUNCHELIAN, MD, DCH.,** Professor of Paediatrics, who was instrumental in guiding me through initial stages of this study.

I would like to thank to my Assistant Professors **Dr.HEMACHITRA,MD, Dr.SRIDEVI,MD, Dr.RAMKUMAR, MD,DCH.,**

Dr.RAVISHANKAR, MD., Dr.BALAMURUGAN, MD., for their valuable suggestions and support.

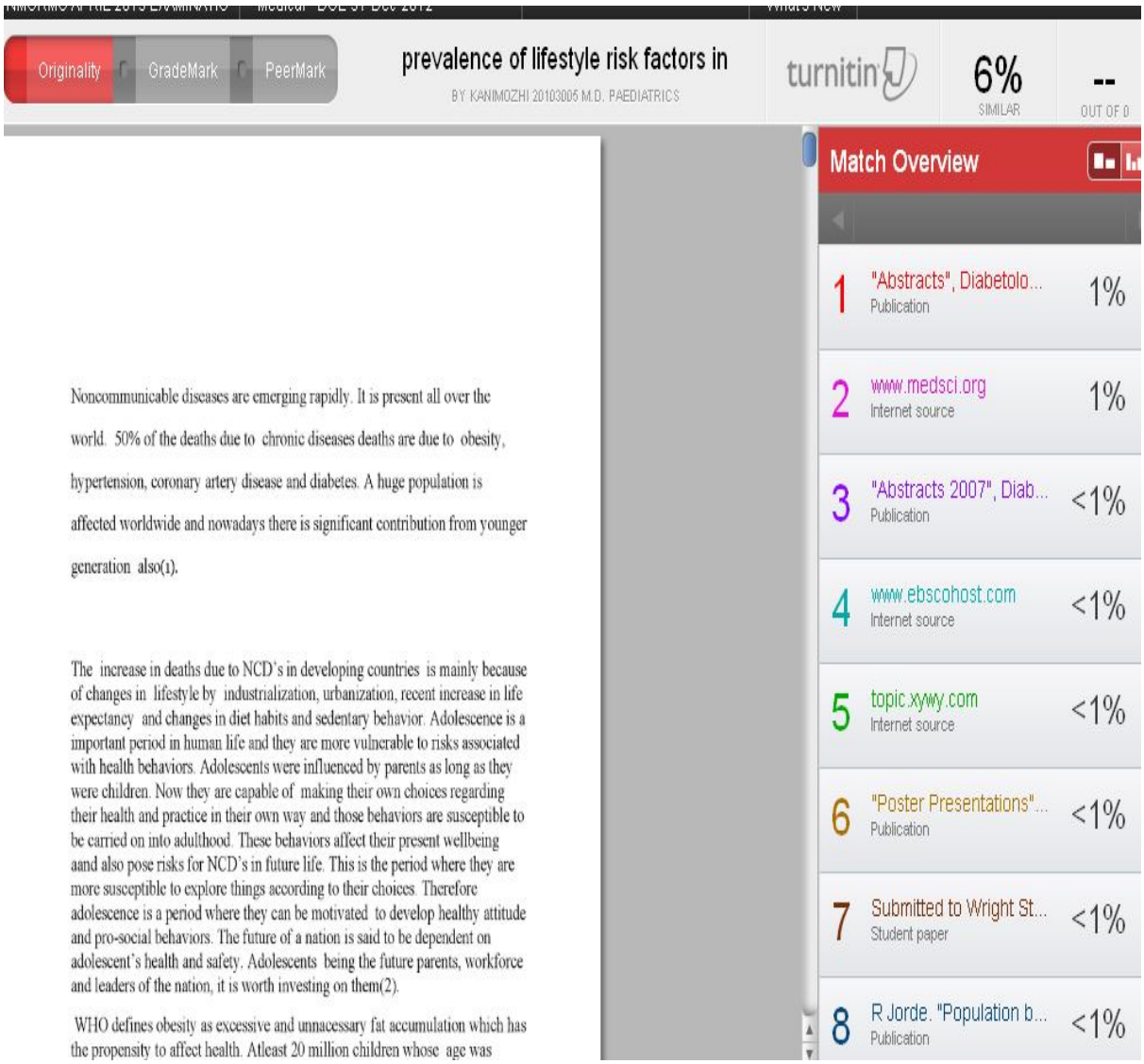
I also thank all the members of the Dissertation Committee for their valuable suggestions.

I gratefully acknowledge the help and guidance received from **Dr.S.SRINIVASAN, DCH.,** Registrar at every stage of this study.

I also express my gratitude to all my fellow postgraduates for their kind cooperation in carrying out this study and for their critical analysis.

I thank the Dean and the members of Ethical Committee, Rajiv Gandhi Government General Hospital and Madras Medical College, Chennai for permitting me to perform this study.

I thank all the parents and children who have ungrudgingly lent themselves to undergo this study without whom, this study would not have seen the light of the day.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Noncommunicable diseases are emerging rapidly. It is present all over the world. 50% of the deaths due to chronic diseases deaths are due to obesity, hypertension, coronary artery disease and diabetes. A huge population is affected worldwide and nowadays there is significant contribution from younger generation also(1).
The increase in deaths due to NCD's in developing countries is mainly because of changes in lifestyle by industrialization, urbanization, recent increase in life expectancy and changes in diet habits and sedentary behavior. Adolescence is a important period in human life and they are more vulnerable to risks associated with health behaviors. Adolescents were influenced by parents as long as they were children. Now they are capable of making their own choices regarding their health and practice in their own way and those behaviors are susceptible to be carried on into adulthood. These behaviors affect their present wellbeing aand also pose risks for NCD's in future life. This is the period where they are more susceptible to explore things according to their choices. Therefore adolescence is a period where they can be motivated to develop healthy attitude and pro-social behaviors. The future of a nation is said to be dependent on adolescent's health and safety. Adolescents being the future parents, workforce and leaders of the nation, it is worth investing on them(2).
WHO defines obesity as excessive and unnacessary fat accumulation which has the propensity to affect health. Atleast 20 million children whose age was
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CERTIFICATE OF APPROVAL

To
Dr. P. Kanimozhi
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Dear Dr. P.Kanimozhi

The Institutional Ethics committee of Madras Medical College, reviewed and discussed your application for approval of the proposal entitled "Prevalence of lifestyle risk factors in non Communicable diseases" No.08072012.

The following members of Ethics Committee were present in the meeting held on 24.07.2012 conducted at Madras Medical College, Chennai -3.

1.	Dr. S.K. Rajan. M.D.,FRCP.,DSc	-- Chairperson
2.	Prof. Pregna B. Dolia MD Vice Prinicpal, Madras Medical College, Chennai-3 Director , Inst. of Biochemistry, MMC, Ch-3	-- Member Secretary
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4.	Prof. C. Rajendiran, MD Director , Inst. of Internal Medicine, MMC, Ch-3	-- Member
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6.	Prof. S. Deivanayagam MS Prof of Surgery, MMC, Ch-3	-- Member
7.	Thiru. S. Govindsamy. BABL	-- Lawyer
8.	Tmt. Arnold Soulina MA MSW	-- Social Scientist

We approve the proposal to be conducted in its presented form.

Sd/Chairman & Other Members

The Institutional Ethics Committee expects to be informed about the progress of the study, and SAE occurring in the course of the study, any changes in the protocol and patients information / informed consent and asks to be provided a copy of the final report.

Member Secretary, Ethics Committee

CONTENTS

INTRODUCTION

Noncommunicable diseases are emerging rapidly. It is present all over the world. 50% of the deaths due to chronic diseases deaths are due to obesity, hypertension, coronary artery disease and diabetes. A huge population is affected worldwide and nowadays there is significant contribution from younger generation also (1).

The increase in deaths due to NCD's in developing countries is mainly because of changes in lifestyle by industrialization, urbanization, recent increase in life expectancy and changes in diet habits and sedentary behavior. Adolescence is aimportant period in human life and they are more vulnerable to risks associated with health behaviors. Adolescents were influenced by parents as long as they were children. Now they are capable of making their own choices regarding their health and practice in their own way and those behaviors are susceptible to be carried on into adulthood. These behaviors affect their present wellbeing and also pose risks for NCD's in future life. This is the period where they are more susceptible to explore things according to their choices. Therefore adolescence is a period where they can be motivated to develop healthy attitude and

pro-social behaviors. The future of a nation is said to be dependent on adolescent's health and safety. Adolescents being the future parents, workforce and leaders of the nation, it is worth investing on them.

WHO defines obesity as excessive and unnecessary fat accumulation which has the propensity to affect health. Atleast 20 million children whose age was below 5 years were found to be overweight in 2005 as per WHO(2). The prevalence of obesity is increasing day by day. It is an important pediatric public health problem. It is not only responsible for complications in childhood but is also a cause for significant proportion ofmorbidity and mortality in adult life(3). The prevalence of overweight and obesity among children has trebled and is now a global epidemic even in resource limited countries(4).An obese child usually grows up as an obese adult. Obesity serves as a risk factor for chronic diseases like coronary artery disease, diabetes mellitus type 2 and musculoskeletal disorders.

Excessive body fat is best measured using dual energy xray absorptiometry(5). Various anthropometric measurements can reliably reflect obesity besides being easy to apply. The commonest index used to measure obesity is Body mass index (BMI). It is a

simple index of weight for height. It is calculated by using the formula

$$\text{BMI} = \frac{\text{Weight in kg}}{\text{Height in m}^2}$$

It has been proved that a high BMI for age has a moderately high (70% - 80%) sensitivity and positive predictive value, along with a high specificity (95%). The adverse risk factor levels and thetendency to develop obesity in adulthood is more common in children with high levels of BMI than those with normal BMI.

Overweight is defined by WHO as BMI greater than or equal to 25 and obesity as BMI greater than equal to 30 in adults. Whereas BMI Z score charts are used in children to define overweight and obesity as Z score of +1 to +2 and more than +2 respectively(5). WHO Z score charts are available upto 19 years of age.

Obesity occurs as a result of imbalance between amount of calories taken in and energy expenditure. It is a disorder of energy

balance(4).The tendency for an individual to develop obesity is the result of a complex interactions between genetic factor , appetite, food intake, physical activity and energy expenditure.

Causes of obesity include medical causes like genetic and endocrine and the other is environmental and socioeconomic factors. Eventhough several genetic variants contribute to excessive body weight and obesity, the main contributor is the discrepancy between energy intake and energy utilisation(6). Environmental factors determine levels of available food, preferences for type of foods, levels of physical activity and preferences for types of activities over the last 4 decades, the food environment has changed dramatically. Foods are being prepared by the food industry with high levels of calories, simple carbohydrates and fat. There is dramatic increase in the consumption of fast foods. A typical fast food meal can contain 2000 kcal and 84g of fat. The levels of physical activity in children have declined. Physical activity has decreased due to relative unavailability of physical space and due to academic pressure (4,7). Changes in built environment have resulted in more reliance on cars and there is decrease in walking to school and other places. An increase in sedentary activity and a lack of exercise also contribute to

an increase in prevalence of overweight (8). Children may watch as much as 20 hour/week of television, which decreases their physical activity, exposes them to food advertising, and increases caloric intake. Other screen time, such as video games, internet computer use, telephone use and home viewing of movies all may reduce childhood physical activity.

Changes in sleeping behavior might also contribute to obesity. Children and adults have decreased the amount of time spent in sleeping. This may be due to increased work and increased time spent at television and at computers. Chronic partial sleep loss can increase risk of weight gain and obesity, with greater impact on children than in adults. This is due to decreased leptin levels and increased ghrelin levels along with increased hunger and appetite secondary to orexins, peptides synthesized in the lateral hypothalamus that can increase feeding. There is also increase in intake of junk foods while watching television. Decreased sleep also results in decreased glucose tolerance and insulin sensitivity related to alterations in glucocorticoids and sympathetic activity.

Children of parents who are obese are at increased risk of developing obesity. Antenatal factors like increased weight gain,

increased weight of baby at birth and gestational diabetes has been found to be associated with obesity in later life. This is due to the fact that increased concentration of glucose and fatty acids are delivered to the developing fetus and this leads to increase in fetal insulin secretion and consequent increase in growth. As a result the pancreatic islet cells, hypothalamus and adipose tissue of the fetus sustain long term changes leading to increased adiposity throughout life(9). IUGR babies with catch up growth in early infancy are more prone to develop central obesity and cardiovascular risk. In general, obesity reflects complex interaction of genetic, metabolic, cultural, environmental, socioeconomic and behavioral factors.

Obesity has association with resistance to insulin and the metabolic syndrome. Hypertension, hyperglycemia and elevated serum cholesterol, low HDL-cholesterol are associated with obesity. Obesity as such is associated with higher cardiovascular disease risk. Increased BMI also pose a risk of serious health issues like diabetes mellitus type2, coronary heart disease and certain cancers. According to IOTF, 1.7 billion of the global population is already at an increased risk of weight associated NCD’s such as type 2 diabetes(10).

Obese pediatric patients develop complications during childhood and adolescence and they will continue into adulthood. They include type 2 diabetes, insulin resistance, hypertension, hyperlipidemia, metabolic syndrome, polycystic ovary syndrome, gallbladder stones and nonalcoholic fatty liver disease. Increased deposition of adipose tissue increases resistance to insulin and the latter has an independent effect on lipid metabolism and cardiovascular health. The Harvard Growth Study revealed that adolescent boys with overweight had twice the risk of deaths due to cardiovascular disease than those who had normal weight. Mechanical complications like obstructive sleep apnea and orthopedic problems like blount disease and slipped capital femoral epiphysis also occur. It can also cause mental health problems like anxiety, depression, low self-esteem and decrease in school performance(5).

Therapy should involve changing family lifestyle and not simply focus on the child(4).

Hypertension

Hypertension was defined as blood pressure > or =140/90 mm Hg regardless of body size, sex or age(11). In children hypertension can be defined as average systolic and/or diastolic BP that is > or = 95th percentile for that age, gender and height measured for a minimum of 3 times. Prehypertension is defined as average systolic or diastolic BP > or = 90th percentile but < 95th percentile. The 4th Report for the Diagnosis, Evaluation and Treatment of high BP in children in the year 2004 recommended staging for hypertension. BP between 95th and 99thcentile plus 5mm Hg is categorized as hypertension stage 1 and children with BP above the 99thcentile plus 5 mm Hg have stage 2 hypertension.

Primary hypertension is more frequently in adultsand if they are not treated, it can be a major cause for myocardial infarction, cerebrovascular accident and renal failure. Hypertensive adults are at risk of 20% increase in coronary artery disease and 35% increased risk of stroke with an increase in diastolic blood pressure by 5mm Hg.

Systemic hypertension is not common in infants and young children. The prevalence rate is <1%. Its presence often indicates the

presence of an underlying disease(secondary HT). Severe and symptomatic hypertension in children is usually due to secondary hypertension. Primary hypertension is rare in children. The prevalence of primary essential hypertension, mostly in older school age children and adolescents, has increased in prevalence in parallel with the obesity epidemic.

The preferred method for measuring is by auscultation and a BP cuff appropriate for the size of the child's arm should be used. The BP should be measured with the child in sitting position after a period of quiet for atleast 5 min. Careful attention to cuff size is necessary to avoid over diagnosis, as a cuff that is too short or narrow artificially increases BP readings. The cuff is said to be of appropriate size if the inflatable bladder coversatleast 40% of the arm circumference at a point midway along the upper arm and should cover at least two thirds of upper arm length and 80- 100% of its circumference.

The causes of primary hypertension is multifactorial; obesity, genetic variations in calcium and sodium transport, reactiveness of smooth muscle of the vessel wall, the renin angiotensin mechanism, sympathetic nervous system over activity and insulin resistance are implicated. Primary HT is dependent on many factors like heredity,

stress, diet and obesity. Children and adolescents with primary hypertension are commonly overweight, often have a strong family history of HT, and usually have BP values at or only slightly above the 95thcentile for age. Pathogenesis of essential HT may also be related to elevated uric acid levels(10).

Normotensive children of hypertensive parents may showabnormal physiologic responses that is similar to those of their parents. When subjected to stress or competitive tasks, the offspring of hypertensive parents respond with increases in heart rate and BP than do children of normotensive parents. Offsprings of Excretion of increased levels of catecholamine metabolites in the urine and elevation of BP can occur in offsprings of parents with HT when compared to children who do not have a hypertensive parent. Children and adolescents who have their BP more than the 90thcentile corresponding to their age have a nearly threefold likelihood of developing HT in adult life when compared to children who have their BP at the 50thcentile. Adolescents with primary hypertension may progress from high cardiac output and normal systemic vascular resistance to the adult pattern of normal cardiac output and elevated systemic vascular resistance.

Diabetes mellitus type 2(NIDDM)

NIDDM is a heterogenous disorder, the mechanisms being involved areperipheral resistance to insulin and failure of the beta cell to keep up with increasing insulin demand. There is relative insulin deficieny. It has a polygenic inheritance. Environmental factors such as low level of physical activity and excessive intake of calories and obesity, in particular, central obesity are aggravating factors through development of resistance to insulin. But Asians appear to be at risk for type 2 diabetes mellitus at lower degrees of total adiposity. The fastest growing type of diabetes in all children is non insulin dependent DM. Resistance to insulin and abnormal insulin secretionisbeing implicated as causative factors(12). Obesity does not cause the same degree of resistance to insulin in all individuals and even those who develop insulin resistance do not necessarily exhibit impaired beta cell function.

The National Diabetes Data Group and WHO have formulated diagnostic criteria for diabetes mellitus based on(13).

1) The spectrum of fasting plasma glucose(FPG)

2) The response to an oral glucose load(OGTT)

1) Impaired glucose tolerance:

Fasting glucose-110-125mg/dl(6.1-7.0mmol/l)

2 hr plasma glucose during the OGTT-<200mg/dl(11.1mmol/dl)

2. Diabetes mellitus:

Random plasma glucose-Greater than or equal to 200mg/dl(11.1 mmol/l)

FPG -Greater than or equal to 126mg/dl(7mmol/l)

2 hr plasma glucose during the OGTT- $\geq$ 200mg/dl.

Environmental and lifestyle related risk factors

Obesity is the most important lifestyle factor associated with development of diabetes which in turn is associated with the intake of high energy foods, physical inactivity and television viewing, i.e., on screen time. Maternal smoking also increases the risk of diabetes and obesity in the offspring. Also smoking by young adults also increases their own risk of diabetes through an unknown mechanism. Sleep deprivation and psychosocial stress may be a cause for increased

obesity risk in childhood and impaired glucose tolerance in adults, possibly via over activation of hypothalamic- pituitary- adrenal axis(4). Antipsychotics and antidepressants cause weight gain and insulin resistance. There is also evidence that schizophrenia and depression themselves can act as a risk factor fornon insulin dependent DM and metabolic syndrome. The increase in use of antipsychotics and antidepressants in the pediatric population, this association is likely to become stronger(5,14).

In the SEARCH study of diabetes in youth, 92% of the patients with type 2 diabetes had 2 or more elements of the metabolic syndrome(hypertension, hypertriglyceridemia, decreased HDL and increased waist circumference including 70% with hypertension.

METABOLIC SYNDROME

Metabolic syndrome can be defined as a multifactorial disorder where a group of interrelated factors play a causative role in the pathogenesis of ischemic heart disease and non insulin dependent DM. It is causing a high socioeconomic burden to all the nations worldwide. The parameters included are hypertension, impaired

glucose tolerance and hyperlipidemias(increased TG, decreased high density lipoproteins and increased LDL and VLDL). Central obesity and insulin resistance are found to be the central cause for the syndrome. Nowadays, conditions like proinflammatory and prothrombotic, nonalcoholic steatohepatitis and sleep disordered breathing are found to be the other components of the syndrome(10).

Recently metabolic syndrome is emerging rapidly in children as well as in young adult which will cause high economic and health burden worldwide.

Historically, Raven described this as “Syndrome X” but it was changed to metabolic syndrome in the future to highlight the fact that it plays a major role the occurrence of ischemic heart disease and type 2 diabetes mellitus by insensitivity of peripheral tissues to the action of insulin(10).

The new International Diabetes Federation(IDF) defines(15,16) a person to be affected by metabolic syndrome if he has

1) Abdominal obesity(waist circumference more than the normal for that population) along with atleast 2 of the 4 parameters given below.
    a) Elevated triglycerides ≥ 1.7mmol/l or they are on drugs for this abnormality.
    b) Low high density lipoprotein cholesterol < 40 mg/dl in boys and<50 mg/dl in girls or they are on drugs for this abnormality.
    c) Elevated BP- systolic blood pressure ≥ 130 mm Hg / diastolic BP ≥ 85 mm Hg or they are on drugs for HT detected in the past.
    d) Raised fasting plasma glucose- FPG ≥ 100 mg/dl or they are on drugs for NIDDM detected in the past. If fasting plasma glucose ≥ 100 mg/dl, oral glucose tolerance test has to be done.

Though abdominal obesity and insulin resistance are considered to play a major role in the pathogenesis of MS, the central cause is yet to be identified. Inherited factors, sedentary lifestyle, increasing age, a proinflammatory state and hormonal changes are also considered to have a central role.

Insulin promotes glucose entry from extracellular level to intracellular level. When tissues become unresponsive to the action of insulin, glucose cannot enter into the cells. They will accumulate in the blood and serves as a stimulating factor for increased production of insulin to overcome the hyperglycemia. This leads to exhaustion of the beta cells of the endocrine pancreas. Finally when the pancreas becomes unable to cope up with the high blood glucose, the person will develop hyperglycemia. At this point he will be labeled to have NIDDM(5,17). The tissues suffer injury and there is an increase in the level of blood triglycerides(since insulin is an anabolic hormone, there is an excess production of triglycerides from free fatty acids) even before a person is labeled as having type 2 DM. Insulin resistance is the key component of metabolic syndrome. Significant obesity, central distribution of body fat and acanthosis nigricans can serve as surrogate markers for insulin resistance.

Puberty and the metabolic syndrome

Puberty is more vulnerable to the disturbance in glucose metabolism. . At the time of puberty, there is increase in insulin resistance and decrease in insulin sensitivity in both diabetic and nondiabetic children. Inorder to overcome the insulin resistance the production of insulin by the beta cells increases. Puberty also affects body fat, BP and lipids. Females have a strikingly increase in body fat through adolescence but males do not have a consistent change in body fat. Sedentary lifestyle and unfavourable dietary patterns is seen more frequently in adolescent age group and they influence the abnormal fat deposition, BP and lipid profile(18,4)

Eating behavior

The growth spurt which occurs during adolescent period warrants sufficient nutrients intake inorder to meet the demands. Also adolescence is a period where they are more vulnerable to the environmental factors and they avoid the regular dietary habits. They also take less food at home and more from the outside which makes them deficient of a balanced diet. Parents influence youth's eating

behavior. Family meals may be an opportunity for the parents to model and reinforce good eating habits(19). Peer groups and friends may be more influential during adolescent period than during childhood because social networks become an important factor for motivations and behaviors and then have a stronger influence than parents(20). The adolescents have certain diet related behaviors like preferring oil fried and energy dense diet, overweight, awareness in maintaining a thin body, sedentary behavior, adventurous behavior, skipping breakfasts and more of nonvegetarian food habits, economic status/poverty, the transition into puberty/adolescent risk taking, poor breakfast eating habits and inappropriate vegetarianism. Fruits and vegetables in their natural state are low energy density foods. Fruits and vegetables are high in water and fibre(5). Water and fibres reduces the energy content of foods since they constitute a large proportion. Cholesterol needs bile salts to enter into the portal circulation. Fibresby binding to bile salts prevent cholesterol from entering the portal circulation. Also fruits and vegetables ensure the supply of antioxidants like vitamin E and C, polyphenols and carotenoids. Antioxidants prevent vessels from oxidative injury and thereby prevent atherosclerosis. Also they help controlling appetite, facilitate

digestion, improve nutritional status, decrease hypertension risk, reduce insulin resistance, decrease blood lipid levels and decrease inflammation(21). Decreased intake of fruits and vegetables are seen among children and adolescents. Globally low fruit and vegetables intake is estimated to contribute to the development of approximately 31% of coronary heart disease and 11% of ischemic stroke and it has also increased the prevalence of some cancers.(22,23)

The food environment has changed dramatically. Foods are being prepared by the food industry with high levels of calories, simple carbohydrates and fat. There is dramatic increase in the consumption of fast foods. A typical fast food meal can contain 2000 Kcal and 84g of fat(24).

It has been proven that television watching has a very high effect on BMI. By watching television, activity as well as eating behavior is affected since they are exposed to various energy dense food products and also by the intake of fat rich foods during television viewing. Children have liking towards foods which are rich in salt, sugar and fats. Television advertisements exposes them to such type of foods. Onscreen time includes time spent in television watching, computer and internet use, video game playing, telephone use and

home viewing of movies etc. AAP suggests that the on screen time should be less than 2 hours in 24 hours in children more than 2 year old and children less than 2 years should not watch television(5).

Physical activity is any activity that causes energy utilization. The levels of physical activity in children have declined. Physical activity has decreased due to relative unavailability of physical space and due to academic pressure(4). Also the academic pressure put by the family and school have led to the decrease in physical activity both in schools and at home. Barriers to physical activity include safety issues, heavy traffic, lack of bicycle lane, and decreased number of playgrounds. Physical inactivity is increasing due to increased usage of machines to perform our daily activities, examples include usage of buses and trains instead of walking, electronic mail and higher onscreen time for entertainment. Also increasing traffic and roads being in such a way that there is no enough space for walking and decreased availability of physical space for playing all contribute to the sedentary lifestyle.

Prevention of NCD’s

There are four approaches to prevent NCD’s. They are clinical prevention, health protection, health promotion, public health policy. Each country should have a national strategic action. Without this, deaths from NCD’s are expected to increase by 17% from 2005 to 2015(25).

AIM AND OBJECTIVES

To study the prevalence of lifestyle risk factors like eating behavior, physical activity, on screen time in non communicable diseases like obesity, hypertension and type 2 diabetes mellitus in adolescent school children.

To study

1) The prevalence of lifestyle risk factors like eating behavior which includes fruits, vegetables and junk foods, physical activity, on screen time like television watching, computer and internet use, playing videogames.
2) Prevalence of obesity using BMI as indicator, prevalence of hypertension and type 2 diabetes and its association with obesity.
3) And the association of lifestyle risk factors with NCD's like obesity, hypertension and type 2 diabetes mellitus in adolescent school children.

STUDY JUSTIFICATION

Noncommunicable diseases are emerging rapidly. It is present all over the world. 50% of the deaths due to chronic diseases deaths are due to obesity, hypertension, coronary artery disease and diabetes. A huge population is affected worldwide and nowadays there is significant contribution from younger generation also.

There are many studies done to determine the prevalence of lifestyle risk factors in non communicable diseases. Considering the racial and ethnic differences, there is a need for similar studies in our children. Hence this study has been designed out for the same.

REVIEW OF LITERATURE

1) Akhilkant Singh et al(27) conducted a cross sectional survey in the year 2006 april at the Fr.Agnel school, Gautamnagar, NewDelhi, India by the department of preventive medicine, AIIMS. The objective was to identify the prevalence of life style related risk behaviors for NCDs in healthy school subjects in an urban school in Delhi. 510 students aged 12-18 years and of both sex participated in the study. Risk factors were elicited using age appropriate modified Global school based student health survey self administered questionnaire. Height, weight and BP were measured by standard methods. Of 510 students, 18.6% of boys and 16.5% of girls were overweight or obese. The prevalence of systolic HT was 7.84% and diastolic HT was 2.15%. Risk factors for systolic blood pressure were extra salt, smoking, BMI. Risk factor for diastolic blood pressure were SBP, family history of HT & Obesity. Risk factor of obesity are BMI, age, systolic BP, Sex, fast food consumption(>3 times/week). They concluded that there is an increase in childhood obesity together with associated problems. Therefore to prevent NCD's intervention has to be implemented at school level itself.

2) A cross sectional study was done by Abhiruchi Galhotra et al(1) in the year 2009 December by the department of community medicine, Government medical college, Chandigarh at Government Model Senior secondary school, Chandigarh. The objective was to evaluate the presence of risk factors causing NCD's in 11-16 year old adolescents in the Periurban School using standard criteria. 866 adolescents of age group eleven to sixteen years, both sex were included in the study and they were surveyed through GSHS questionnaire. Weight, height and BP were measured by standard methods. The study revealed that 0.5% were preobese and 0.3% were obese. Systolic HT was noted in 1.7% of malesand 0.7% of females. Diastolic HT was found in 0.7% of girls. BMI was positively associated with fast food consumption and diastolic BP. Negatively associated with number of times the subjects ate fruit. They concluded that the risk factors for NCD's are highly prevalent in periurban school children and so lifestyle techniques have to be changed.
3) Nebal Abdel Rahman Aboul Ella et al(28) conducted a cross sectional study from the year 2000-2008 in the government schools all over Egypt. Objective was to estimate the current prevalence of

overweight and obesity, HT, glucose disorders, lipid profile, metabolic syndrome and to investigate some related risk factors. 4251 students from 7 schools were selected using random stratified cluster sample. Prevalence rates of overweight and obesity were assessed from data from previous cross sectional studies. Height and weight were measured using standard methods. BMI was assessed using NCHS data. Fasting blood glucose measured with glucometer and lipid profile and fasting plasma insulin using standard methods, metabolic syndrome using United State NCEP. Prevalence of overweight was nearly twice as that of obesity and obese are nearly double the risk for dyslipidemia than nonobese. Prevalence of prediabetes was 16.4%, diabetes 0.7%, HT was 1.4%, high total cholesterol was 6% and low HDL was 9.4%. Half of females and 1/3rd of males did not have any form of physical activity and 7% were using tobacco regularly. 25% consumed more salt more than 50% ate fried foods. So school based intervention programmes for promoting healthy lifestyles to prevent rapidly emerging overweight and obesity is necessary.

4) A prospective cohort study was conducted by S.V. Mane et al(29) in Chinchwad Corporation area near Pune by the department of

Pediatrics, Padmashree Dr.D.Y.Patil Medical College, Pimpri The aim was to evaluate the incidence of HT and under nutrition in adolescents. 200 adolescents in the age group of 15-18 years were studied. General demographic data and behavioral risk data was collected and BP and anthropometry were measured using standard methods. Health risk score was calculated. CDC chart was used for BMI. Prevalence of overweight was 7% and obesity was 6.5%. Systolic HT was 4% (p 0.04) and diastolic HT was 8% and they were more common in boys. Increased BMI contributed to increased systolic BP with (p0.00) and increased diastolic BP with (p0.00). Stress was significantly correlated to BMI(p0.009). Sedentary habits significantly affected systolic BPP0.009), fast food, exercise, onscreen time and total risk score did not affect NMI significantly. Imparting knowledge and preventive behavior helps in preventing lifestyle diseases.

5) D.R Bharati et al(30) conducted a cross sectional study in the year 2005 from January to october in 2555 school children of age 10-17 years from 31 schools selected by systematic random sampling technique of Wardha city and suggest interventions. Predesigned and pretested questionnaire was used to bring out the information

on health behaviors and family data. Height and weight was measured using standard methods. Body mass index ≥ eighty fifth and less than ninety fifth centile was taken as overweight and ≥ 95thcentile as obese. 3.1% were overweight and 1.2% were obese and overweight was higher in more than 15 years age group and in children from urban area(95%C.I 1.6-5.5) than rural area. Physical activity < 30 min(p0.001), urban residence(p0.001) and parents education less than 6th standard were significantly associated. Sex(p0.84), television viewing(p0.43), eating habits(p0.869) had no association. Preventive and promotive efforts need to be directed towards family for the health of future generation.

6) Kelly Samara da Silva et al(31) conducted a school based cross sectional study from may 2007 to July 2007 at Carias do sul in Brazil. The objective was to determine the prevalence and grouping patterns of risk factors for NCD's according to socioeconomic level and age of adolescents. The study was conducted among 1675bstudents of 11 to 17 year age group of both private and public school. Questionnaire based on US Youth Risk Behavior Survey was used for demographic, socioeconomic and behavioral variable. BP and anthropometry were measured using

standard methods. Cardiorespiratory fitness measured using Progressive Aerobic Cardiovascular Endurance Run(PACER). 50% belonged to middle class, 62% and 31% had low cardiorespiratory fitness and high fat intake respectively. 62% of adolescents had atleast 2 risk factors for NCD with frequent clustering among older teenagers. Smoking and alcohol clustered together were 4.1 times greater among boys and 2.2 times greater among girls than expected.

7) Ali Khan Khuwaja et al(32) conducted a cross sectional school based survey in the year 2009 by the department of community sciences in 3 districts Karachi, Lahore and Quetta of Pakistan. The objective was to identify the preventable risk factors for NCD's in adolescents.414 students of 14-17 year age group of six schools were included in the study. Pretested self administered questionnaire for lifestyle risk factors was used. 80% of children had unhealthy diet(p0.47). 54% was physically active. Males were exposed to more of active and passive smoking and betel nut chewing(p0.001). 3.1% had no preventable risk factors, 13.8% had one of these risk factors and 1/3 had 3 of these preventable risk factors.

MATERIALS AND METHODS

METHODOLOGY

A) Study Design:

Cross sectional/survey

B) Study Period :

August 2012 to November 2012.

C) Study Place :

Selected government as well as private higher secondary schools in Chennai.

D) Study Population :

Inclusion Criteria - Adolescent school children(12-18 years)

Exclusion Criteria - Presence of chronic illness and motor disabilities.

E) Sample Size – 856

F) Based on odd's ratio given in previous studies, with an α error of 1% and β error of 10% sample needed is 428. Applying design/Cluster effect, double the number i.e. 856 will be included in the study.

MANEUVRE

As the first step, the head of the educational institution was met, research project explained, and permission to conduct the study was obtained.

Second step was meeting the parents in a parents teachers meet and explaining the research project to them. The children of the parents who gave informed consent were recruited in the study. Basic demographic data was recorded.

Students were surveyed through GSHS questionnaire(28), a self administered questionnaire to know about the physical activity, sedentary behavior and food intake. GSHS is a Global school-based student health survey. It was mainly developed to make accurate data available on health related activities among students:

1) So that the countries can identify primary problems and develop programmes, and allocate funds for school health development.
2) Since this is formulated in such a way that it can be used by all countries, the data can be compared with that of other countries.
3) We can identify the pattern of health related activities and it can be used to promote positive health.

The GSHS questionnaire has a set of questions which addresses all aspects of health. It has questions specific to each country, and the students can complete the questionnaire in one regular period.

It has three components.1)10 headings, 2) detailed questions in each heading and 3) questions specific to each country. The questions were translated into tamil and was tested on a subsample for comprehension. Since the student privacy has to be protected, questionaire was not shared.

Modification in the questions was done according to our community and questions related to dietary behaviors, physical activity, television watching were asked.

The students were asked to recall the number of days they ate fruits and vegetables and junk food and also the frequency per day in the past one week. Eating fruits and vegetables and junk foods for more than or equal to 3 days/week was considered significant. They were explained about the food stuffs which were included in junk foods like sugary fruit drinks, carbonated soft drinks like coke etc, icecream, desserts, milk shakes, samosa, bajji, french fries, pizza, burger, pasta, cookies, cakes, fried rice, snacks(salty/fat/sweet) etc.

Examples of physical activity like walking to school and other places, involvement in sports, playing with friends, running, fast walking, biking, dancing, football, etc. The students were asked about the total number of days they were involved in physical activity in a week for a minimum of 1 hour per day during the past seven days. Physical activity for a total of less than 60 minutes was not considered significant. Time spent in onscreen time like television watching, spending time in computer and internet, playing video games, watching movies during a typical day was asked and a duration of more than or equal to 3 hours was considered significant because the AAP suggests that the on screen time should be less than 2 hours /day in children more than 2 year old.

Family history of chronic illnesses like hypertension, diabetes mellitus were elicited orally from parents.

Anthropometric measurements like height, weight were measured using standard methods.

Height

The height was measured by calibrating the height in cm on the wall and then the child was asked to stand close to the wall without

foot wear with the head in Frankfurt plane (outer canthi of eyes at horizontal plane with upper border of tragus) and recorded in metre to the accuracy of 1mm.

Weight

The weight was measured in kg using a bathroom scale to the accuracy of 500gm.

Body mass index(BMI)

BMI was calculated using the formula

$$BMI = \frac{\text{Weight in kg}}{\text{Height in m2}}$$

Children are grouped as either overweight or obese based on WHO s Z score charts for BMI. Overweight is BMI with Z score between +1 to +2 and obesity is BMI with Z score of more than +2.

Blood pressure

BP is measured using mercury sphygmomanometer. The students were asked to sit quietly for 5 minutes and BP was measured with the child in the sitting posture, in the right upper arm with the hand well supported and not less than 30 minutes after breakfast.

Appropriate sized cuff with an inflatable bladder that covers 40% of the arm circumference at a point midway along the upper arm and covering two thirds of upper arm length and 80-100% of its circumference was used. BP was measured thrice and the mean of 2nd and 3rd reading was taken as the final BP. Children with elevated reading was confirmed on the next visit. Systolic pressure was indicated by appearance of the first korotkoff sound and diastolic pressure by the disappearance of 4thkorotkoff sound. The children were classified as normotensive, high normal and hypertension based on the 2nd Task Force classification. There are age specific values and references are enclosed in the annexure.

High normal is BP $\geq$ to 90th centile and < 95thcentile. Hypertension is $\geq$ 95th percentile.

Fasting blood sugar

After a overnight fasting for 6 hours blood samples were taken for fasting blood sugar from 7.30 t0 8 am. After taking blood samples, they were asked to take food. Blood samples were transported to laboratory in ice box within 30 minutes.

They were classified as prediabetes and diabetes based on The National Diabetes Data Group and WHO's diagnostic criteria(15).

Impaired glucose tolerance:

Fasting glucose-110-125mg/dl(6.1-7.0mmol/l)

2 hr plasma glucose during the OGTT-<200mg/dl(11.1mmol/dl)

Diabetes mellitus:

Random plasma glucose ≥ 200mg/dl(11.1 mmol/l)

FPG ≥ 126mg/dl(7mmol/l)

2hr plasma glucose during the OGTT ≥ 200mg/dl.

Statistical analysis

The collected data was entered in Microsoft office excel spread sheetand data wasanalyzed with SPSS version 13.0 software. Descriptive analysis was used to describe, mean and standard deviation, Pearson chi-square test for comparing qualitative data, independent T-Test, fishers exact test, odds ratio for comparing relative risks in each group. Statistical significance was set at $P< 0.05$. The study was approved by ethics committee of the hospital.

RESULTS

Prevalence of lifestyle risk factors in non communicable diseases

No of students included in the study: 856

Table 1: Age distribution

Age in years	No	Percentage
12	52	6.07
13	92	10.74
14	92	10.74
15	168	19.62
16	168	19.62
17	220	25.70
18	64	7.47
Total	856	100

Of the 856 students participating in the study, the age group was 12-18 years and majority were from 17 year age group(25.7%).

Chart showing age distribution

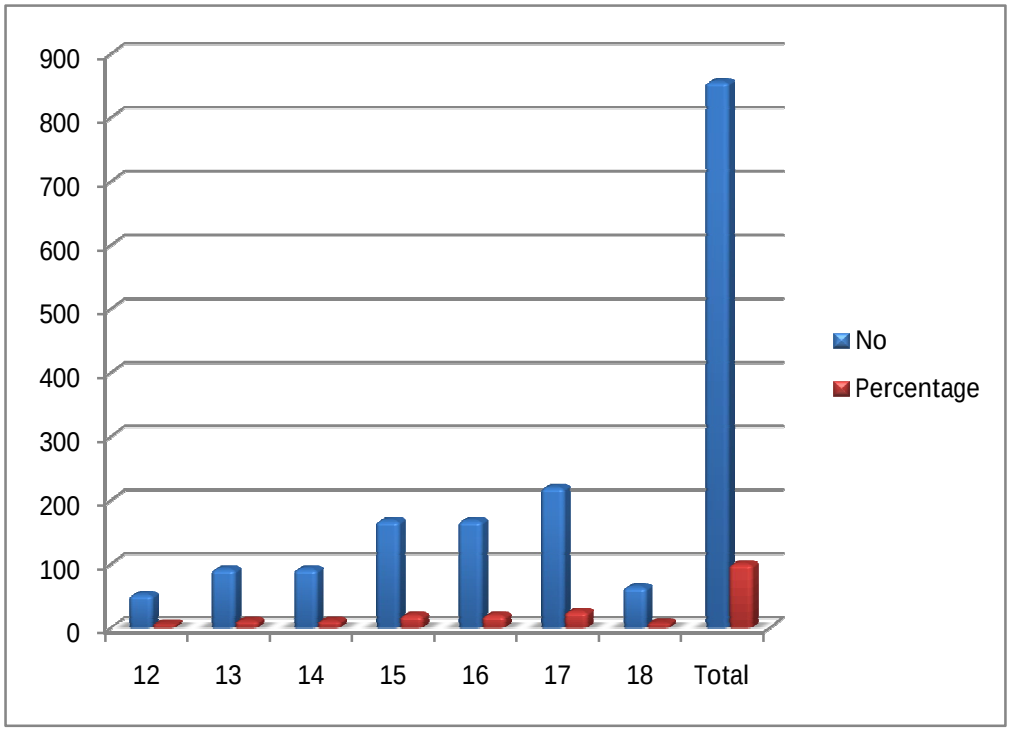
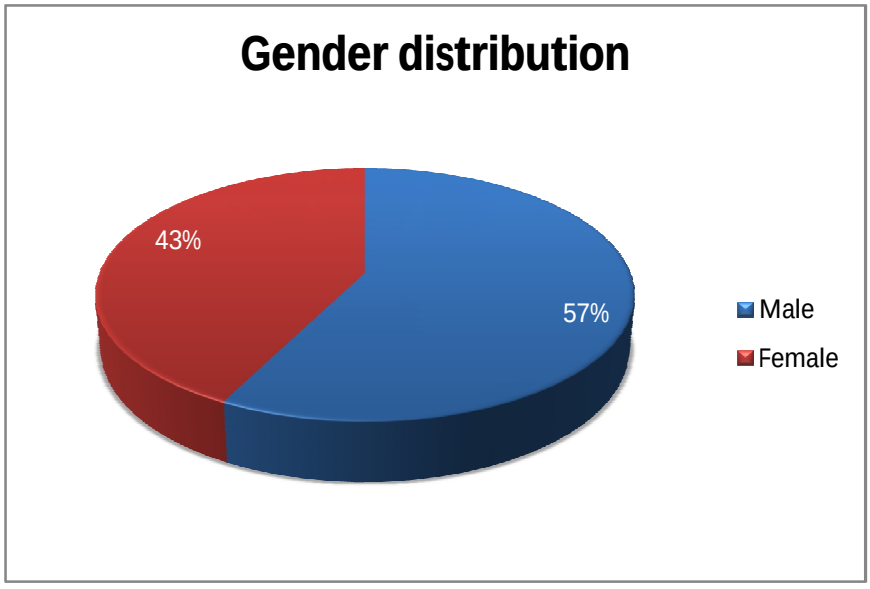


Table 2: Gender distribution

Gender	No	Percentage
Male	492	57.47
Female	364	42.52
Total	856	100

Chart showing gender distribution



Of the 856 students, 492(57.47%) were from boys and 364(42.52%) were from girls.

Table 3: Mean BMI by age group

Age	BMI(mean)
12	17.91
13	18.62
14	18.07
15	19.88
16	19.15
17	21.0
18	21.58
Total mean	**19.45**

The mean BMI was highestin 18 year age group(21.58).

Chart showing mean BMI

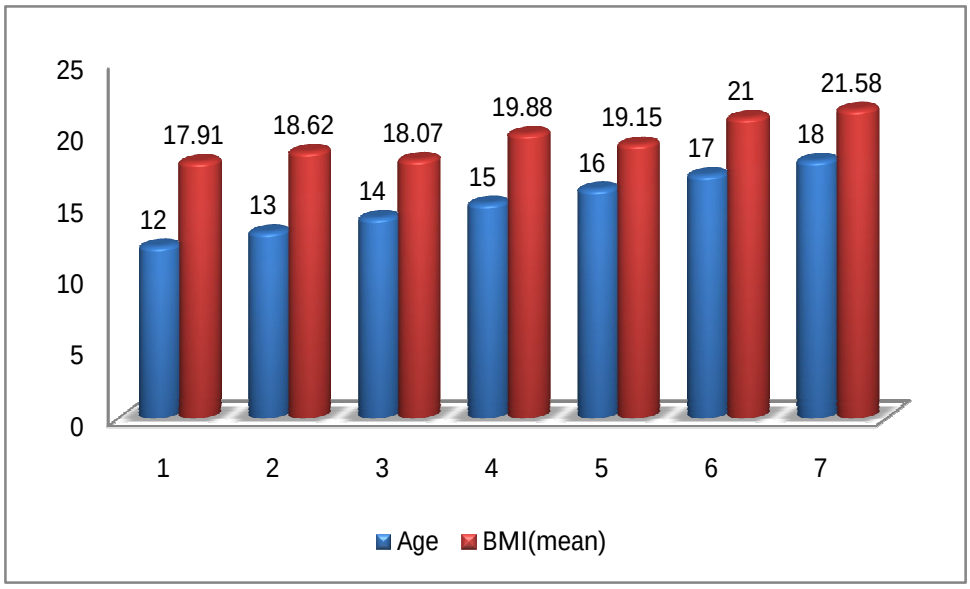


Table 4 : BMI distribution by age group

Age	Normal No(%age)	Overweight No(%age)	Obese No(%age)	Total(overweight & obese) No(%age)
12(52)	48(92.3)	4(7.69)	0	4(7.69)
13(92)	76(82.60)	16(17.39)	0	16(17.39)
14(92)	84(91.30)	4(4.34)	4(4.34)	8(8.69)
15(168)	136(80.95)	24(14.28)	8(4.76)	32(19.04)
16(168)	148(88.09)	16(9.52)	4(2.38)	20(11.90)
17(220)	168(76.36)	40(18.18)	12(5.45)	52(23.63)
18(64)	44(68.75)	16(25)	4(6.25)	20(31.25)
Total 856	**704(82.2)**	**120(14.01)**	**32(3.73)**	**152(17.75)**

This table shows that over weight (BMI with Z score of +1 to +2) was present in 120 (14.01%) students and obesity (BMI with Z score more than +2) was present in 32(3.73%) students. Majority was from 18 year age group with 25% being overweight and 6.25% being obese. Students from 12 and 13 year age group were not obese in this observation. 17.75% proved themselves to be overweight or obese.

Chart showing BMI distribution by age

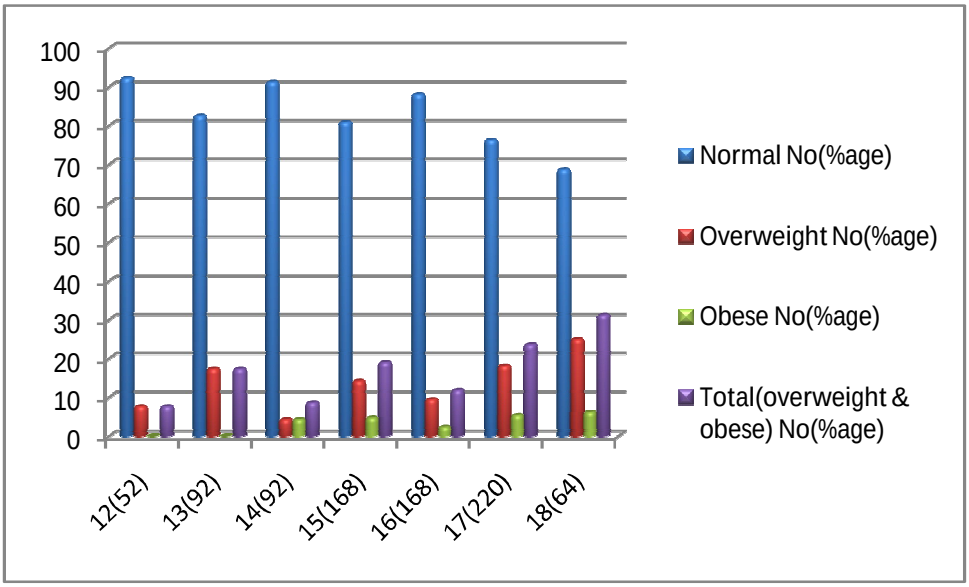


Table Showing BMI distribution

Normal	overweight	obese
704(82.2)	120(14.01)	32(3.73)

Chart showing BMI distribution

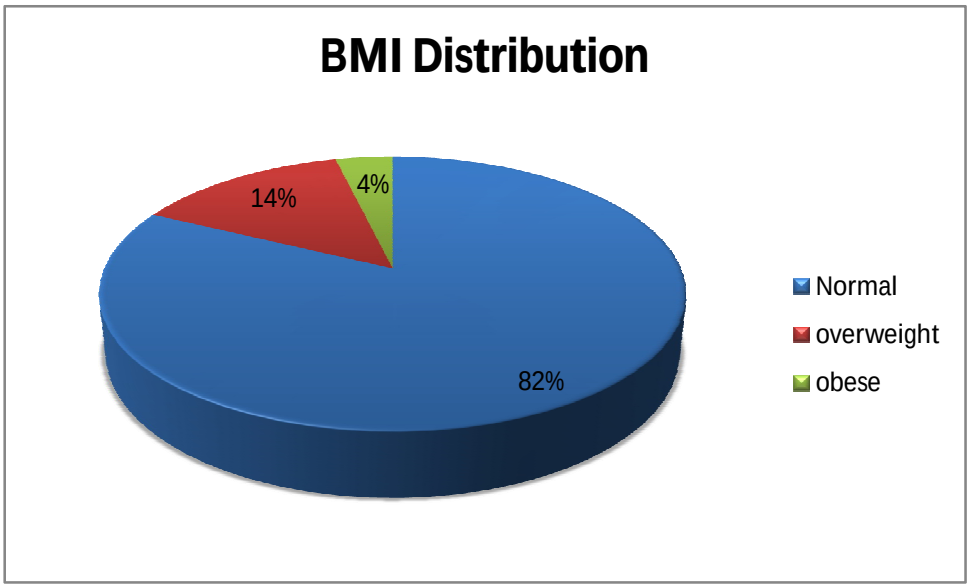


Table 5: Distribution of lifestyle risk factors by age group

Age	Physical activity	Onscreen time	Eating fruits	Eating vegetables	Eating Junk foods
12(52)	8(15.38)	8(15.38)	36(69.23)	52(100)	24(46.15)
13(92)	6(6.52)	20(21.73)	68(73.91)	92(100)	60(65.21)
14(92)	28(30.43)	20(21.73)	52(56.52)	92(100)	48(52.17)
15(168)	48(28.57)	60(35.71)	136(80.95)	168(100)	108(64.28)
16(168)	40(23.8)	56(33.33)	108(64.28)	168(100)	104(61.9)
17(220)	16(5.5)	60(27.27)	144(65.45)	220(100)	156(70.90)
18(64)	8(12.5)	36(56.25)	44(68.75)	64(100)	44(68.75)
Total	154(17.99)	260(30.37)	588(68.69)	856(100)	544(63.55)

Physical activity(3 or more days per week) was highest in 14 year old age group, onscreen time(3 or more hours per day) and intake of fruits(3 or more days per week) was highest in 15 year old age group. Students from 17 year old age group maximum junk food consumption(3 or more days per week).Overall nearly 17.99% had physical activity, 30.37% spent time in watching television and in computer, 68.69% and 63.55% consumed fruits and junk foods respectively.

Chart showing distribution of lifestyle risk factors by age

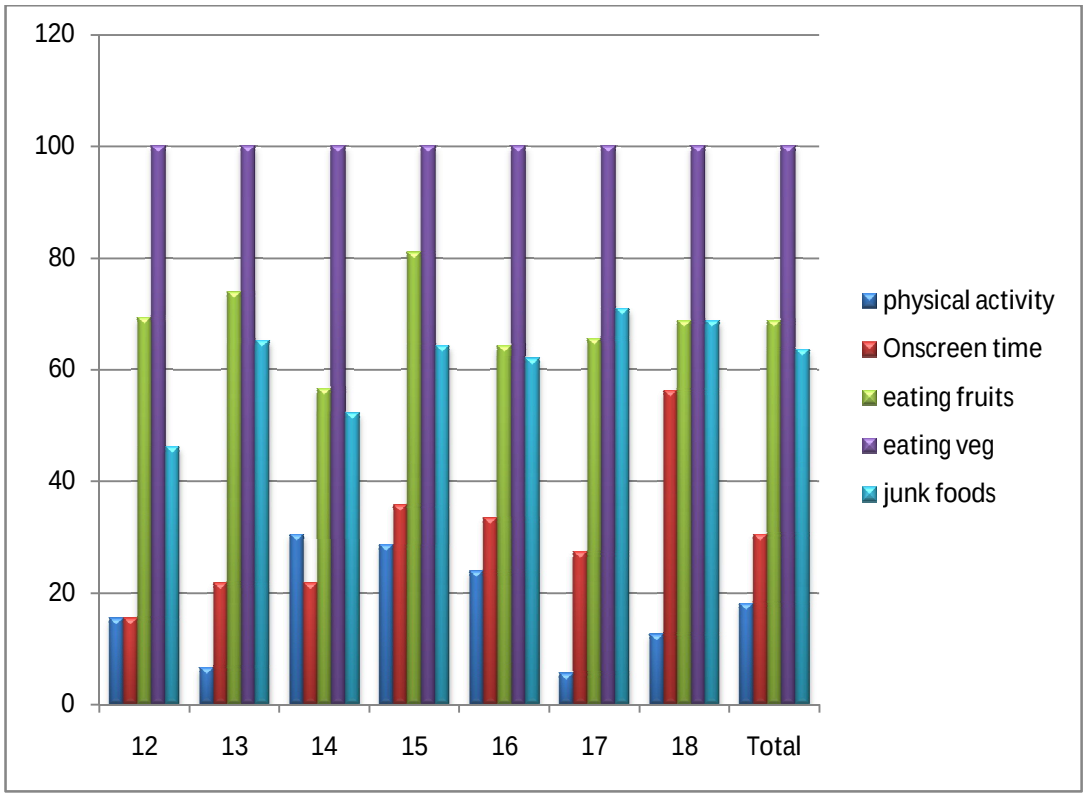


Table 6 : Distribution of lifestyle risk factors

Risk factors	Physical activity (≥3days /week)	Onscreen time (≥3hrs /day)	Eating fruits (≥3days /week)	Eating vegetables (≥3days /week)	Eating junk foods (≥3days /week)
Total No(%age)	154(17.99)	260(30.37)	588(68.69)	856(100)	544(63.5

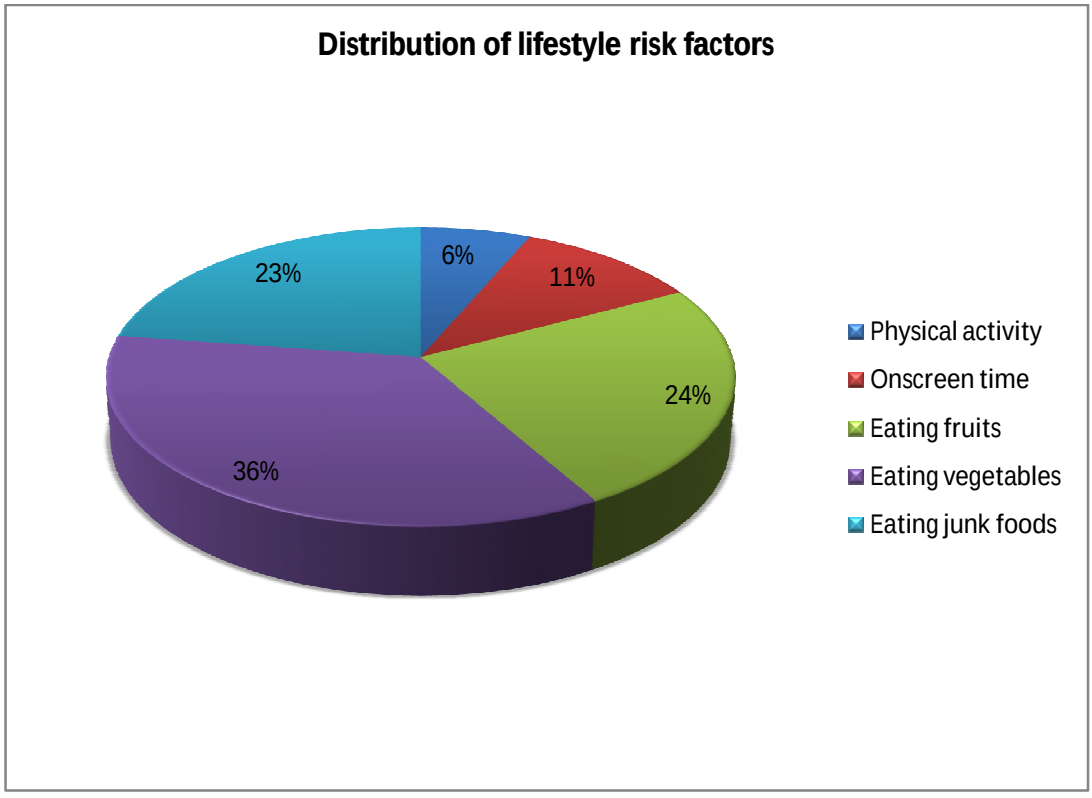


Table 7 : Distribution of family history of hypertension by sex

	Male(n=492)	Female(n=364)	Total(856)
Family H/o HT	172(34.95)	112(30.76)	284(33.17)
Family H/o DM	192(39)	160(43.95)	350(40.8)

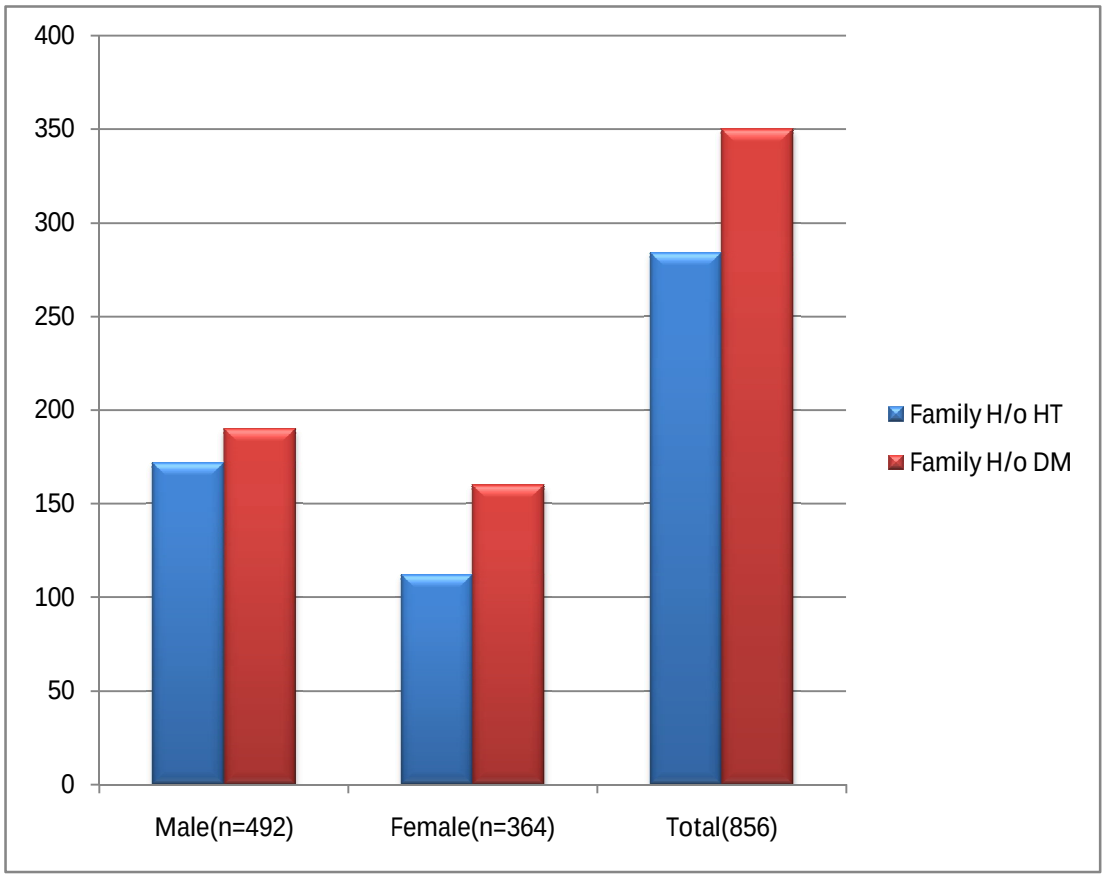


Table 8 : Mean systolic and diastolic BP by age group

Age	Mean Systolic BP	Mean diastolic BP
12(52)	98.76	68
13(92)	102.52	68.08
14(92)	108.26	70.16
15(168)	109.61	69.16
16(168)	110.80	71.76
17(220)	117.56	74.47
18(64)	119.17	74.82
Total mean	**111.03**	**71.42**

Mean SBP found to be 111.03mm Hg and mean DBP found to be 71.42. From the above observation the mean SBP and DBP was normal for all age groups. There is increase in SBP and DBP with increase in age.

Chart showing distribution of mean BP by age.

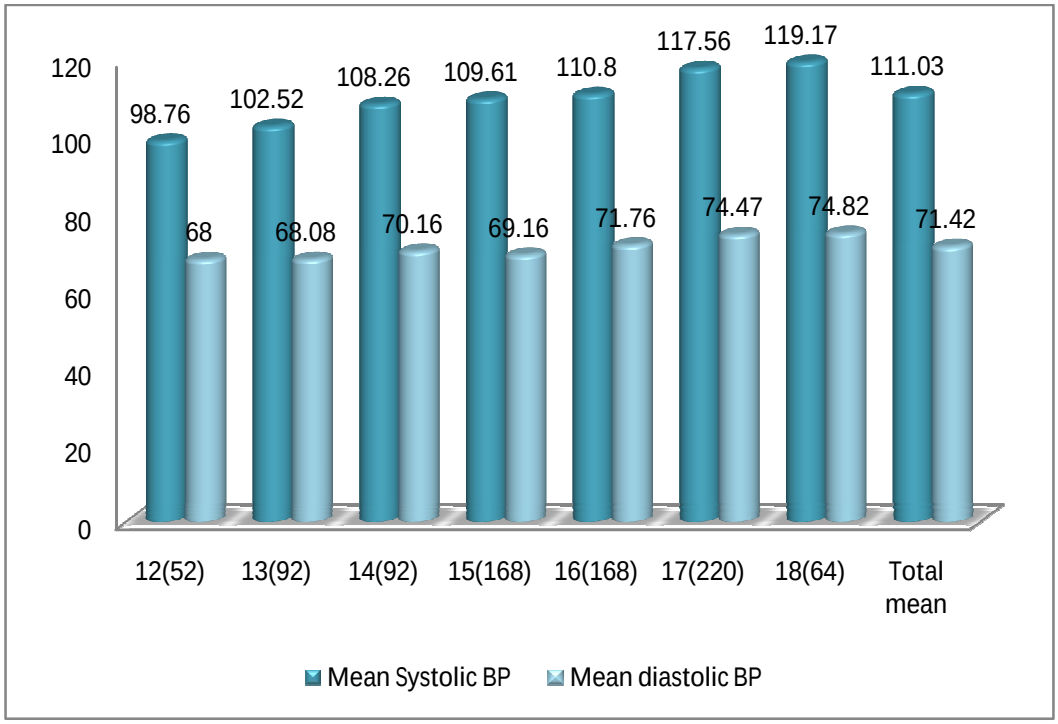


Table 9 : Distribution of BP by age group

Age	Normal BP No(%)	Prehypertension No(%)	Hypertension No(%)	Total (increased BP) No(%)
12(52)	52(100)	0	0	0
13(92)	92(100)	0	0	0
14(92)	80(86.95)	12(13.04)	0	12(13.04)
15(168)	160(95.23)	8(4.76)	0	8(4.76)
16(168)	156(92.85)	8(4.76)	4(2.38)	12(7.14)
17(220)	188(85.45)	20(9.09)	12(5.45)	32(14.54)
18(64)	48(75)	12(18.75)	4(6.25)	16(25)
Total (856)	**776(90.65)**	**60(7)**	**20(2.33)**	**80(9.34)**

Prehypertension and hypertension was found to be maximum among 18 year old students. BP was found to be normal 12 and 13 year old age group. This shows the significance of age on BP. Overall 7% of students had prehypertension and 2.33% had hypertension.

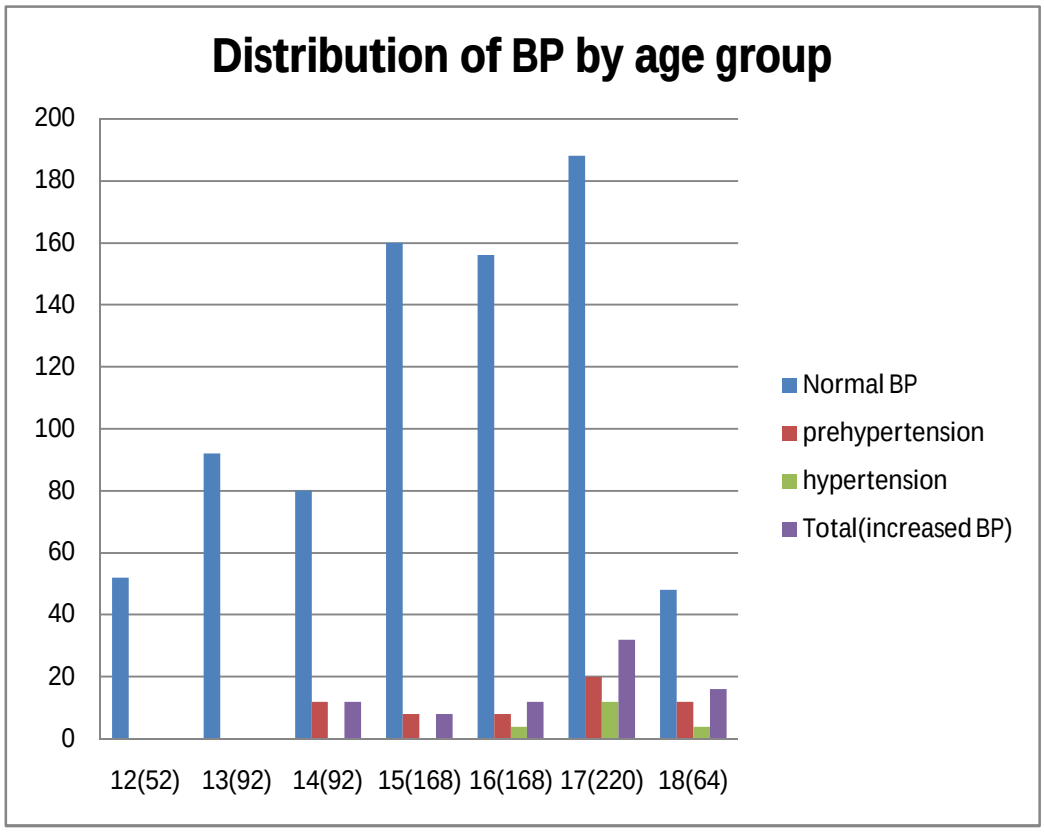

Distribution of BP by age group
200
180
160
140
120
100
80
60
40
20
0
12(52)
13(92)
14(92)
15(168)
16(168)
17(220)
18(64)
Normal BP
prehypertension
hypertension
Total(increased BP)

Table 10 : Distribution of blood sugar by age

Age(No)	Normal blood sugar No(%age)	Prediabetes No(%age)	Diabetes No(%age)	Total increased blood sugar No(%age)
12(52)	52(100)	0	0	0
13(92)	92(100)	0	0	0
14(92)	92(100)	0	0	0
15(168)	168(100)	0	0	0
16(168)	160(95.23)	8(4.76)	0	8(4.76)
17(220)	208(94.54)	12(5.45)	0	12(5.45)
18(64)	60(93.75)	4(6.25)	0	4(6.25)
Total(856)	**832(97.19)**	**24(2.8)**	**0**	**24(2.8)**

The above table shows that blood sugar was found to be normal among 12-15 year old age group. Prediabetes was found to be noted among 24(2.8%) of students and there was no diabetes among any age group. It also shows that age is a significant factor for the risk of impaired glucose tolerance.

Table 11: Distribution of mean fasting blood sugar by age

Age	Mean fasting blood sugar
12(52)	78.6
13(92)	73.52
14(92)	71.08
15(168)	72.74
16(168)	77.11
17(220)	79.54
18(64)	84.11
Total(856)	**76.47**

The mean fasting blood sugar was found to be 76.47 mg/dl.

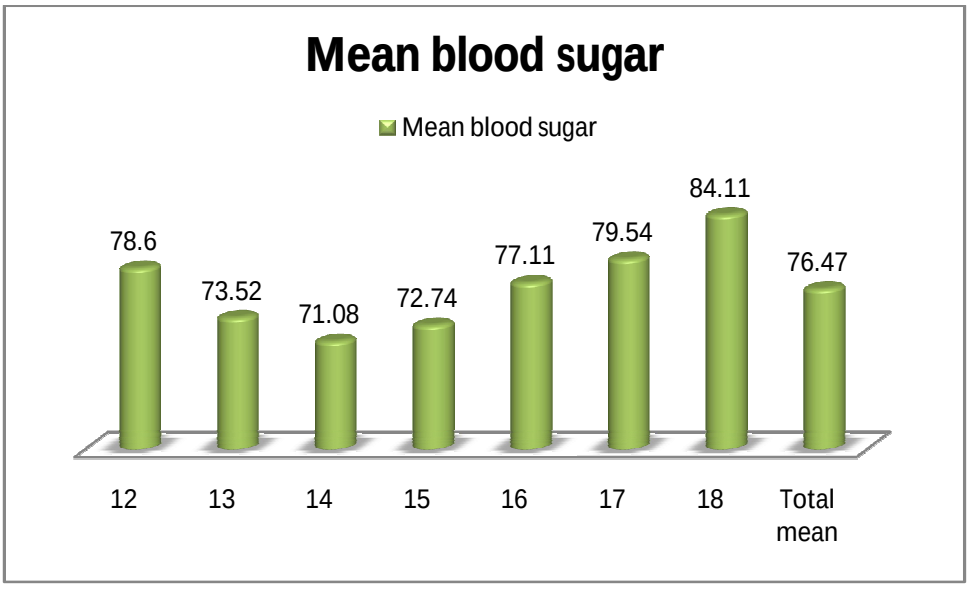


Table 12: Comparison of distribution of risk factors in male and female

	Boys(n=492)	Girls(n=364)	P value
Physical activity (≥3days/week)	132	40	0.001
Onscreen time(≥3hrs/day)	128	132	0.775
Eating fruits (≥3days/week)	332	252	0.000
Junk foods (≥3days/week)	312	232	0.001
Family H/o HT	172	112	0.198
Family H/o DM	192	160	0.147

Physical activity and onscreen time

Only 17.99% (26.8% of boys and 10.9% of girls) were engaged in physical activity for >/= 3 days in a week for a maximum of one hour per day. The rest were either not at all engaged or had physical activity for less than 3 days/week. Only 1/10th of girls were engaged in

physical activity when compared to boys(1/4th)9p=0.001). 30.37% (26% of boys and 36.26% of girls) spent time in television viewing and watching movies and playing computer games for 3 or more hours/day. It also shows that girls spend more time in sedentary habits than boys.

Food habits

Almost 3/4th i.e., 68.69% consumed fruits for 3 or more days in a week of which 67.4% were boys and 69.23% were girls. Difference was not noted among boys and girls. Only 24.2% had fruits on all 7 days. Vegetables were consumed by almost all students. Junk food was taken by 63.55% of students for 3 or more days/week of which 10% had taken it on all 7 days. Boys had contributed to 63.41% and girls of 63.73% showing no difference among gender.

Family history

34.95% of males and 30.76% of females had a history of HT in parents or in grandparents. 40.8% (39% of boys and 43.95% of girls) had a family history of diabetes mellitus.

Table 13: Comparison by sex distribution

	Male(n=492)	Female(n=364)	P value
Over weight	64(13%)	56(15.38%)	
Obese	20(4%)	12(3.2%)	
Total increased BMI	84(17%)	68(18.68%)	0.543
Prehypertension	44(8.9%)	12(3.2%)	
Hypertension	20(4%)	0	
Total Increased BP	64(13%)	12(3.2%)	0.000
Prediabetes	12(2.4%)	12(3.2%)	
Diabetes	0	0	
Total increased blood sugar	12(2.4%)	12(3.2%)	0.452

BMI

17.75 (17% of boys and 18.68% of girls) were found to be either overweight or obese(overweight is BMI with Z score of +1 to +2 and obese is BMI with Z score of more than +2). 14% were found

to be overweight and 3.73% were found to be obese. There was no sex difference in the distribution of BMI (p=0.543). Overweight was found to be thrice more common than obesity.

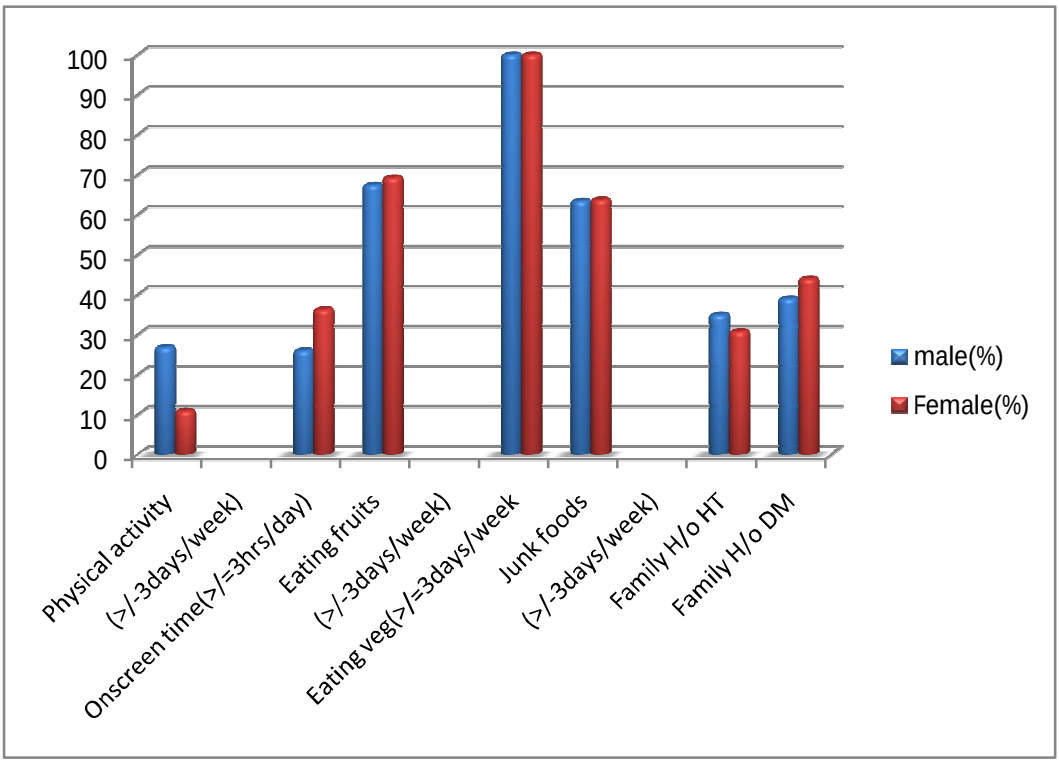
Blood pressure

9.34% had increased blood pressure of which 13% was among boys and only 3.2% among girls. 7% had prehypertension and 2.33% had hypertension. Prehypertension and hypertension was noted in 8.9% and 4% of boys respectively. 3.2% of girls had prehypertension. There was no hypertension among girls. This shows that male sex is a risk factor for increased BP(p=.000).

Blood sugar

2.8% i.e., 2.4%of male sex and 3.2% of female sex were found to have impaired fasting blood sugar(prediabetes-fasting blood sugar more than 100 but less than 126 mg/dl). Diabetes was found to be absent among both sex. Difference was not found among males and females(p=.452).

Charts showing the distribution of risk factors in male and female



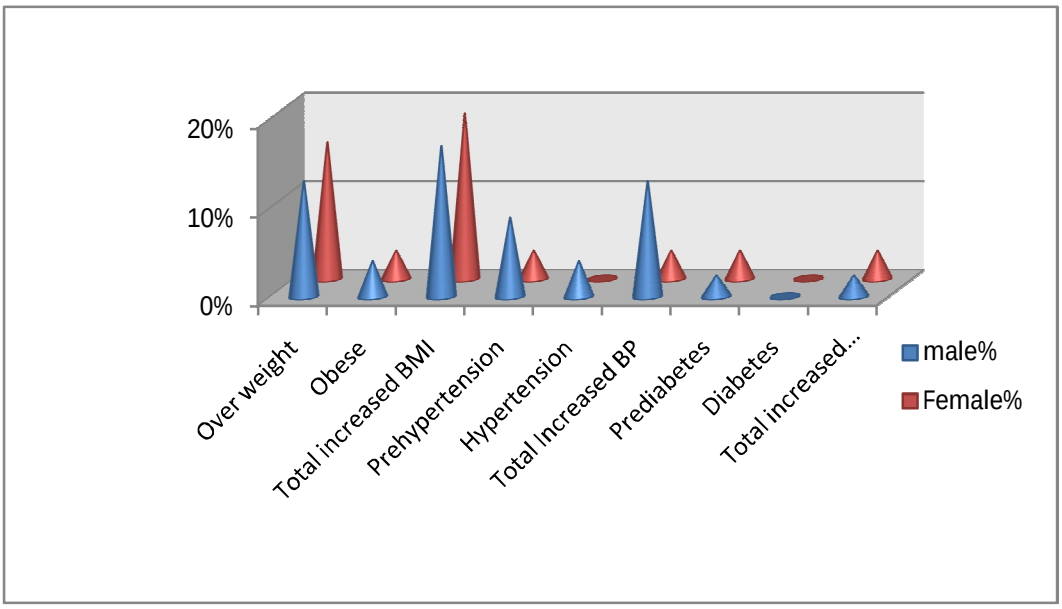


Table No.14 : Correlation between lifestyle risk factors and BMI

	B	**S.E.**	**Wald**	**Df**	**Sig.**	**Exp(B)**	**95.0% C.I.for EXP(B)**	
							Lower	**Upper**
AGE	.045	.081	.312	1	.576	1.046	.892	1.227
SEX(1)	.226	.278	.659	1	.417	1.253	.727	2.162
Physical activity days /week	-.307	.098	9.904	1	.002	.735	.607	.891
Hrs of TV watching /day	1.036	.144	51.841	1	.000	2.818	2.125	3.736
Eating fruits days/week	-.042	.070	.361	1	.548	.959	.835	1.100
Eating vegetables days /week	.368	.147	6.285	1	.012	1.445	1.084	1.926
Junk foods days /week	1.202	.095	160.934	1	.000	3.326	2.762	4.005
Constant	-11.570	1.853	38.971	1	.000	.000		

Table 14(a) : Correlation between life style factors & BMI

	Increased BMI	Significance
Sex	152	0.417
Physical activity(154)	8	0.002
Onscreen time(260)	92	0.000
Eating fruits(588)	96	0.548
Eating vegetables(856)	152	0.012
Eating junk food(544)	144	0.000

Table 15 : Correlation between lifestyle risk factors and BP

	B	S.E.	Wald	df	Sig.	Exp(B)	95.0% C.I. for EXP(B)	
							Lower	Upper
Physical activity days / week	.090	.073	1.524	1	.217	1.094	.949	1.261
Hrs of TV watching /day	-.409	.118	11.994	1	.001	.664	.527	.837
Eating fruits days /week	-.003	.061	.003	1	.960	.997	.885	1.123
Eating vegetables days /week	.476	.134	12.571	1	.000	1.609	1.237	2.094
Junk foods days /week	.553	.085	41.929	1	.000	1.738	1.470	2.054
FHHT(1)	-.988	.247	15.971	1	.000	.372	.229	.604
FHDM(1)	-.727	.245	8.807	1	.003	.483	.299	.781
BMI Status	-1.240	.390	10.127	1	.001	.289	.135	.621
Constant	-5.301	.984	29.001	1	.000	.005		

Table 15(a) : Correlation between lifestyle risk factors and BP

	Increased BP	Significance
Physical activity(154)	8	0.217
Onscreen time(260)	52	0.001
Eating fruits(588)	64	0.960
Eating vegetables(856)	80	0.000
Eating junk food(544)	76	0.000
Increased BMI	56	0.001
F/H HT	36	0.003
F/H DM	36	0.001

Table 16 : Correlation between lifestyle risk factors and blood sugar

	B	S.E.	Wald	df	Sig.	Exp(B)	95.0% C.I.for EXP(B)	
							Lower	Upper
Physical activity days /week	.183	.148	1.524	1	.217	1.200	.898	1.604
Hrs of TV watching /day	-.083	.220	.141	1	.707	.921	.598	1.417
Eating fruits days /week	-.145	.122	1.410	1	.235	.865	.680	1.099
Eating vegetables days /week	.172	.226	.578	1	.447	1.188	.763	1.850
Junk foods days /week	.678	.162	17.474	1	.000	1.970	1.434	2.707
F/HHT	-1.646	.508	10.513	1	.001	.193	.071	.522
BMI Status	-.377	.662	.323	1	.570	.686	.187	2.513
Constant	-6.144	1.758	12.221	1	.000	.002		

Table 16(a) : Correlation between lifestyle risk factors and blood sugar

	Increased Blood sugar	Significance
Physical activity(154)	0	0.217
Onscreen time(260)	12	0.707
Eating fruits(588)	16	0.235
Eating vegetables(856)	24	0.447
Eating junk food(544)	24	0.000
Family H/o HT	24	0.001
Increased BMI	12	0.570

Table 17 : Correlation between BMI and BP

	Increased blood pressure	Normal blood pressure
Increased BMI	**56**	**96**
Normal BMI	**24**	**680**

Blood pressure was found to be increased in 56 students with increased BMI and 24 students with normal BMI. Blood pressure was found to be normal in 96 students with increased BMI. There was a significant association between blood pressure and BMI with an odd's ratio of 0.289and p value of 0.001.

Table 18 : Correlation between BMI and blood sugar

	Increased blood sugar	Normal blood sugar
Increased BMI	12	136
Normal BMI	12	696

Blood sugar was found to be increased 1n 16 students with increased BMI and 8 students with normal BMI. 136 students had increased BMI but normal blood sugar. No association was found between BMI and blood sugar(p=0.570)

Table 19 : Correlation of lifestyle risk factors and BMI, BP, blood sugar.

Independent variable	Dependent variables		
	BMI	**BP**	**BLOOD SUGAR**
Significant	Physical activity Onscreen time junk foods	Sex Onscreen time Eating vegetables Junk foods BMI F/H HT, F/H DM	Junk foods BMI F/H HT
Insignificant	Sex Eating fruits and vegetables	Physical activity Eating fruits	Physical activity Onscreen time Eating vegetables Eating fruits BMI

From the above table it is evident that BMI is dependent on physical activity. It is found to have negative correlation with physical activity (p=0.002). Decreased physical activity was found to have

increased BMI and vice versa. Onscreen time was found to have a positive association with BMI(p=0.000). Junk foods was also found to be have a positive association with BMI(p=0.000).

BMI was found not to be dependent on sex(p=.417), eating fruits(p=0.548) and vegetables(p=0.012).

BP was found to be dependent on eating vegetables, junk foods, onscreen time and BMI and F/H HT and F/H DM. It is found to have a positive association with junk foods(p=0.000), onscreen time(p=0.001), BMI(p=0.001), F/H HT(0.003) and F/H DM(0.001) and with eating vegetables(p=0.004). BMI was not dependent on physical activity(0.217) and eating fruits(0.960).

Blood sugar was found to be dependent on junk foods(0.000) and F/H HT(0.001). It is found not to be dependent on physical activity(0.217), onscreen time(0.707), eating fruits(0.235) and BMI(0.570).

DISCUSSION

This was a cross sectional study framed to estimate the prevalence of risk factors for NCD's in 12-18 year old students selected from a school located in the urban part of Chennai. The school had students from 6^{th} to 12^{th} grades.

In our study, only 17.99% (26.8% of boys and 10.9% of girls) were engaged in physical activity for >/= to 3 days in a week for a maximum of one hour per day. The rest were either not at all engaged or had physical activity for less than 3 days/week. Only $1/10^{th}$ of girls were engaged in physical activity when compared to boys($1/4^{th}$). Physical activity was found to be more common among boys(0.001). A similar study was conducted by Akhil Kant Singh et al(27)in Delhi which showed that $2/5^{th}$(18.3% of males and 22.2% of females) were engaged in physical activity. Also this in contrast to the study conducted by Abhiruchi Galhotra(1) in Chandigarh in which physical activity was found to be present in 32% of study population. Low level of physical activity was found to be present in our study. This can be attributed to the lack of physical space and due to the academic pressure.

30.37% (26% of boys and 36.26% of girls) spent time in television viewing and watching movies and playing computer games for 3 or more hours/day. It also shows that girls spend more time in sedentary habits than boys. This is similar to hours of television watching of 27% in the study conducted by Abhiruchi Galhotra(1) in Chandigarh.

Almost 3/4th i.e., 68.69% consumed fruits for 3 or more days in a week of which 67.4% were boys and 69.23% were girls. Only 24.2% had fruits on all 7 days. This is in contrast to the study conducted by Akhil Kant Singh et al(27) in Delhi which showed that only 39.4% took fruits for 3 or more days in a week. Vegetables was consumed by almost all students. Junk food was taken by 63.55% of students for 3 or more days/week of which 10% had taken it on all 7 days. Boys had contributed to 63.41% and girls of 63.73% showing no difference among gender. This is in contrast to the study conducted by Akhil Kant Singh et al(27) in Delhi which showed that only 32% took junk foods for 3 or more days in a week. This difference could be due to low level of awareness in our study population.

32.85% i.e.,34.95% of malesand 30.76% of females had a history of HT in one of the family members including grandparents.

40.8%(39% of boys and 43.95% of girls) had a history of diabetes mellitus in one of their family members. The study conducted by Akhil Kant Singh et al(27) shows that around one half of boys and girls had a history of hypertension in their family members which is higher than our study group.

BMI

17.75% (17% of boys and 18.68% of girls) were found to be either overweight or obese(overweight is BMI>85th centile and obese is BMI>95thcentile). 14% were found to be overweight and 3.73% were found to be obese. There was no sex difference in the distribution of BMI. The study conducted by Akhil Kant Singh et al(27) shows that 1/5th of males and females were overweight or obese which is similar to our study. Our study showed overweight was nearly thrice that of obesity. Nebal Abdel Rahman Aboul Ella et al(28) s study in Egypt showed that prevalence of overweight was nearly twice as that of obesity more or less similar to our study.

In our study, 9.34% had increased blood pressure of which 13% was among boys and only 3.2% among girls. 7% had prehypertension and 2.33% had hypertension. Prehypertension and hypertension was

noted in 8.9% and 4% of boys respectively. 3.2% of girls had prehypertension. There was no hypertension among girls. This shows that male sex is a risk factor for increased BP. S.V. Mane et al(29)s study done in Pimpri, revealed that male sex is a risk factor for increased BP. Study done by Gupta et al identified HT in 9% of males and 6.1% of females. Vartika Saxena(33) et al s study at Dehradun showed the incidence of HT to be 6.7% more or less similar to our study.

In our study, 2.8% i.e., 2.4% of males and 3.2% of females were found to have impaired fasting blood sugar(prediabetes-fasting blood sugar more than 100 but less than 126 mg/dl). Diabetes was found to be absent among both sex. This is in contrast to study conducted by Nebal Abdel Rahman Aboul Ella et al(28) in Egypt in which Prevalence of prediabetes was 16.4%, diabetes 0.7%.This could be explained by the ethnic difference. . Vartika Saxena et al(33) s study at Dehradun showed the incidence of diabetes to be 3.7% which is in contrast to our study in which there is no diabetes.

In our study, BMI is dependent on physical activity. It is found to have negative correlation with physical activity (p=.002). Decreased physical activity was found to have increased BMI and vice

versa. Onscreen time was found to have a positive association with body mass index(p=.000). Junk foods was also found to have a positive association with body mass index(p= .000).

In our study, BMI was found not to be dependent on sex(p=.417), eating fruits(p=.548) and vegetables(p=.012).Akhil Kant Singh et al(27) showed that BMI was dependent on systolic BP, age, fast food and sex and not dependent on physical activity, eating fruits and vegetables and onscreen time. Urban residence and physical activity had a significant relation with BMI in the study by D.R.Bharati et al(30).

In our study, BP was found to be dependent on eating vegetables, junk foods, onscreen time, BMI and history of HT and DM in family members. It is found to be have a positive association with junk foods(p=0.000), onscreen time(p=0.001) and BMI(p=0.001). It is found to have negative association with eating vegetables(p=.004). S.V. Mane et al(29) in his study showed that systolic BP was significantly affected by sedentary habits(p=0.009). Akhil Kant Singh et al(27) showed that BP was significantly affected by obesity, HT in family members and sex.

In our study, blood sugar was found to be dependent on eating junk foods and F/H of HT. It is found to be positive association with junk foods(p=.000).

LIMITATIONS

Since the study was conducted in adolescents of urban population, this cannot be applied to the rural population.

BMI was used to as an indicator of obesity in this study, but waist circumference is a better indicator of obesity rather than BMI because athletes can have increased BMI.

Only fasting blood sugar was used to define diabetes mellitus.

Most of the obese adolescents substantially under report their true dietary intake. The students may not remember exactly the dietary intake and physical activity in the past one week where a diary should have been used.

SUMMARY

856 students from government school of urban Chennai participated in the study and the age group was from 12- 18 years of which 57.47% were boys and 42.52% were girls. The mean BMI was 19.45 and it was highest in 18 year old age group(21.58). Overweight (BMI 85^{th}-95^{th} centile) was present in 14.01% of students and obesity (more than 95^{th}percentile) was present in 3.73%. Majority was from 18 year age group with 25% being overweight and 6.25% being obese. Overall 17.75% were either overweight or obese. Overweight was found to 3 times more common than obesity. 7% of students had prehypertension and 2.33% had hypertension. Increased BP was found to be maximum among 18 year old students. Age and male sex was found to have a significant effect on BP. The mean systolic blood pressure was 111.03 and diastolic BP was 71.42. 2.8% of students had impaired glucose tolerance. They have not progressed to frank diabetes. Age was found to be a significant risk factor for impaired glucose tolerance. Among the lifestyle risk factors, only 17.99% had physical activity for a minimum of three days per week for a minimum of 1 hour/day. But onscreen time of 3 or more hours was present in 30.37% of students showing that sedentary lifestyle was

more common among the students. 68.69%was taking fruits for a minimum of 3 or more days in a week. More than one half of students were taking junk foods for a minimum of 3 or more days/week. BMI was found to be dependent on physical activity, onscreen time and junk foods. BP was found to be dependent on junk foods, onscreen time, and BMI.

Blood sugar was found to be dependent on junk foods history of HT in one of the family members.

CONCLUSION

This study shows that there is a higher prevalence of risk factors in our school children. Childhood is the period when healthy lifestyle can be developed since those behaviors are going to be continued throughout life and have an impact on future health and wellbeing of the individual as well as the community. So it is essential to apply primary prevention in the childhood itself so that morbidity can be prevented later in life. It is important that the primary prevention should be at all levels including family, school, community. The intervention should be in all aspects like dietary patterns, physical activity and onscreen time. The government should give more importance and develop policies and allocate more funds to promote positive health in children and adolescents since the future growth of the country is dependent on this population.

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ABBREIVATIONS

NCD’s	-	Non communicable diseases
WHO	-	World Health Organization
BMI	-	Body mass index
IOTF	-	International Obesity Task Force
IDF	-	International Diabetes Federation
MS	-	Metabolic syndrome
HT	-	Hypertension
BP	-	Blood Pressure
FPG	-	Fasting Plasma Glucose
OGTT	-	Oral Glucose Tolerance Test
NIDDM	-	Non insulin dependent diabetes mellitus
IUGR	-	Intra Uterine Growth Restriction
HDL	-	High density lipoprotein

LDL	-	Low density lipoprotein
VLDL	-	Very low density lipoprotein
SBP	-	Systolic blood pressure
DBP	-	Diastolic blood pressure
SHT	-	Systolic Hypertension
DHT	-	Diastolic Hypertension
NCEP	-	National Cholesterol Education Programme
CDC	-	Centre for Disease Control and Prevention
F/H	-	Family history
GSHS	-	Global School based Student Health Survey

ANNEXURE

1) BMI

BMI is calculated by using the formula

$$\text{BMI} = \frac{\text{Weight in kg}}{\text{Height in m2}}$$

Overweight- BMI with Z score of +1 to +2

Obese- BMI with Z score more than +2

2) Hypertension

Age		High Normal (in mmHg)	Significant Hypertension (in mmHg)	Severe Hypertension (in mmHg)
6-9 years	Systolic	111-121	122-129	129(129)
	Diastolic	70-77	70-85	85(84)
10-12 years	Systolic	117-125	126-133	133-134
	Diastolic	75-81	82-89	80(89)
13-15 years	Systolic	124-135	136-143	143(149)
	Diastolic	75-85	86-91	91(94)
16-18 years	Systolic	127-141	140-149	149(159)
	Diastolic	80-91	92-97	97(99)
>18 years	Systolic	Not given	140-179	179
	Diastolic	90-109	109	-

High Normal : 90th to 94th percentile for age, boys and girls combined.

Significant Hypertension : 95th to 98th percentile for age, boys and girls combined.

Severe Hypertension : 99th percentile for age, boys and girls combined.

3) Blood glucose:

The National Diabetes Data Group and WHO have issued diagnostic criteria for diabetes mellitus based on the following premises.

1)The spectrum of fasting plasma glucose(FPG)

2)The response to an oral glucose load(OGTT)

Impaired glucose tolerance:

Fasting glucose-110-125mg/dl(6.1-7.0mmol/l)

2 hr plasma glucose during the OGTT-<200mg/dl(11.1mmol/dl)

Diabetes mellitus:

Random plasma glucose-Greater than or equal to 200mg/dl (11.1 mmol/l)

FPG -Greater than or equal to 126mg/dl(7mmol/l)

CLINICAL PROFORMA

1.	Study ID	
2.	School Name	
3.	Class	
4.	Name of the child	
5.	Date of birth	
6.	Age(years and months)	
7.	Sex	
8.	Address	
9.	Socio Economic Status	
10.	Family H/O hypertension, diabetes mellitus	
11.	Height in cm	
12.	Weight in kg	
13.	Systolic BP	
14.	Diastolic BP	
15.	Fasting blood sugar	

GSHS QUESTIONNAIRE

(Modified for our population)

1. How old are you?

   11 years old or younger

   12 years old

   13 years old

   14 years old

   15 years old

   16 years old or older

2. What is your sex?

   Male

   Female

3. In what grade/class/ standard are you?

   GSHS Core Questionnaire DietaryBehaviours Module

4. During the past 7 days, how often did you go

   hungry because there was not enough food in

   your home?

   1) I did not go hungry at all

   2) one day 3) 2 days 4) 3 days 5) 4 days 6) 5 days

   7) 6 days 8) 7 days

5. During the past 7 days, how many days per week did you **usually eat fruit?**

   1) I did not eat fruit during the past 7 days

   2) one day 3) 2 days 4) 3 days 5) 4 days 6) 5 days

   7) 6 days 8) 7 days

6. During the past 7 days, how many times per week did you **usually eat vegetables?**

   1) I did not eat vegetables during the past 7 days

   2) one day 3) 2 days 4) 3 days 5) 4 days 6) 5 days

   7) 6 days 8) 7 days

7. During the past 7 days, how many times per day did you **usually drink carbonated soft drinks, and take other junk foods**, like pizza,burger, french fries, chocolates, chips, icecream, pasta, snacks(salty/fat/sweet) etc.,

   1)I did not drink carbonated soft drinks and did not take junk foods at all during the past 7 days

   2) one day 3) 2 days 4) 3 days 5) 4 days 6) 5 days

   7) 6 days 8) 7 days

8. During the past 7 days, on how many days did
   you eat food from a fast food restaurant?
   1)0 days 2) one day 3) 2 days 4) 3 days 5) 4 days 6) 5 days
   7) 6 days 8) 7 days

GSHS Core Questionnaire PhysicalActivity Module

The next 3 questions ask about physical activity. Physical activity is any activity that increases your heart rate and makes you breathe hard. Physical activity can be done in sports, playing
with friends, or walking to school. Some examples of physical activity are running, fast walking, biking, dancing, football, etc.,

9. During the past 7 days, on how many days were
   you physically active for a total of at least 60
   minutes per day? Add up all the time you
   spent in any kind of physical activity
   each day.
   1)0 days 2) one day 3) 2 days 4) 3 days 5) 4 days 6) 5 days
   7) 6 days 8) 7 days

CONSENT FORM

PREVALENCE OF LIFESTYLE RISK FACTORS

Investigator Name : Dr. P. Kanimozhi

Guide : Dr.C. Subbulakshmi , MD, DCH.,

Co-Guide : Dr. Sridevi A Naaraayan, MD.,

(To be read to caretakers in the presence of witness)

The prevalence of non communicable diseases are rising rapidly and they are no longer restricted to highly industrialized countries. There is an increase in sedentary activity and a lack of exercise which contribute to an increase in prevalence of overweight. Children may watch as much as 20hr/Week of television, which decreases their physical activity, exposes them to food advertisement and increases caloric intake.

This study is school based to know the prevalence of life style risk factors with non communicable risk factors so that if there is positive association, intervention in the form of physical activity, decreasing onscreen time and stress, change in dietary behaviour can decrease the incidence of non communicable diseases.

How is the study being done?

GSHS questionaire will be used. Blood samples will be drawn for blood sugar, serum cholesterol and serum triglycerides.The height and weight of children is measured and hence the BMI calculated. The status of the patient whether is of normal weight or overweight or obesity is calculated.

Can I refuse to join the study?

You may refuse to participate or withdraw from the study at any time. In both cases your child will be treated in the usual manner in the hospital.

Is there benefit or harm to be in this study:

Your child's anthropometric measurement, BMI, blood sugar, blood cholesterol and serum triglycerides is known to you through this study. And also this data can be used for community benefit by intervention in the form of physical activity. There is no harm to the patient in this study.

Confidentiality:

The data collected from the study will be used for the purpose of the study only. The results of the study are to be published. Personal information of the children participating in the study will be kept confidential. There will not be any disclosure about your child's information without your permission.

Subject rights:

I understood that if I wish further information regarding my child's rights as a research subject, I may contact the school where the study is taking place.

INFORMED CONSENT FORM

I have been fully informed about the study and the benefits to my child and the possible harm that can happen. This authorization is valid only for this study. I have understood and received a copy of the consent form. I agree for my child s participation in this research study.

Signature/ Thumb print of parent/guardian:

Signature of the investigator:

Witness Signature:

Date:

Principal Investigator:

AGE	SEX	F/HHT	F/HDM	BMI		SYSTOLIC BP	DIASTOLIC BP	HIGH-SBP/DBP	BLOOD SUGAR	INFERENCE	physical activity-days/week	hrs of TV watching/day	eating fruits days/week	eating vegetables days/week	junk foodsdays/week
18	male	no	no	17		120	78		88		0	2	3	7	2
18	male	no	yes	16.6		120	78		86		2	1	2	7	2
18	male	yes	yes	18.64		110	76		87		2	2	7	7	4
18	male	yes	yes	29	overweight	120	80	DBP-HIGH NORMAL	92		0	3	4	4	7
18	male	yes	yes	19.3		120	70		79		2	2	3	5	4
18	male	no	no	18		118	76		80		5	1	2	7	2
18	male	yes	no	27.2	overweight	146	90	HT	78		2	3	2	7	7
18	male	no	yes	21		120	70		76		6	4	7	3	4
18	male	no	no	17		116	70		78		2	3	7	7	2
18	female	yes	yes	35.49	obese	130	70	SBP-HIGH NORMAL	120	PRE DIABETES	0	5	1	4	7
18	female	no	no	21.25		122	70		80		0	3	6	5	4
18	female	yes	yes	16		100	70		90		2	4	2	6	2
18	female	yes	no	28	overweight	114	70		78		0	2	3	7	7
18	female	no	no	18.2		110	74		75		2	3	4	7	3
18	female	no	no	25.2	overweight	130	90	SBP,DBP-HIGH NORMAL	74		0	3	7	7	4
18	female	no	yes	19.8		110	70		85		0	2	7	7	3
17	male	no	no	19.3		120	70		84		2	2	3	4	3
17	male	no	no	15.95		120	74		93		3	2	2	5	2
17	male	yes	yes	27.2	overweight	140	90	SBP,DBP-HIGH NORMAL	92		0	2	3	7	5
17	male	no	yes	32	obese	146	100	HT	117	PRE DIABETES	2	3	7	7	7
17	male	yes	yes	18.3		118	70		90		0	0	2	5	3
17	male	no	no	16.9		110	70		80		0	0	1	5	4
17	male	no	no	17.4		120	78		70		0	0	3	7	2
17	male	no	yes	17.5		114	70		91		2	2	4	7	7
17	male	yes	no	19.4		116	74		68		2	2	5	7	4
17	male	no	yes	16.21		118	70		74		0	3	7	7	2
17	male	no	no	18.15		130	80	SBP,DBP-HIGH NORMAL	72		0	2	3	7	7
17	male	no	no	18.35		128	80	SBP,DBP-HIGH NORMAL	73		0	3	4	7	3
17	male	no	yes	23.89		122	78		74		0	2	2	7	6
17	male	no	no	25.89	overweight	110	70		75		2	4	2	5	7
17	male	no	no	18.38		110	70		76		5	3	2	4	2
17	male	yes	yes	25.6	overweight	130	100	HT	119	PRE DIABETES	2	3	7	7	4
17	male	no	no	18.65		120	74		80		6	1	2	7	3
17	male	no	yes	25.42	overweight	110	70		82		2	2	2	7	7
17	male	no	yes	20.3		120	76		83		0	2	2	7	3
17	male	no	no	24.93	overweight	136	90	SBP-HIGH NORMAL	84		2	1	7	7	4
17	male	no	yes	18.4		116	70		82		1	2	1	7	3
17	male	yes	yes	17.6		116	76		72		0	2	3	7	2
17	male	yes	no	22		118	70		73		6	2	7	4	3
17	male	no	no	23.8		114	74		71		2	1	4	4	4
17	male	no	yes	32	obese	136	98	HT	74		0	1	3	5	7
17	male	yes	no	21.4		116	70		74		1	1	2	5	4
17	male	no	yes	16.3		110	70		74		0	0	7	7	3
17	male	yes	yes	25.8	overweight	110	68		75		2	2	3	7	5
17	male	no	no	26.3	overweight	120	74		76		0	2	7	7	5
17	male	no	no	22.6		120	74		73		0	4	2	5	3
17	male	yes	yes	28	overweight	118	70		74		0	3	2	7	5
17	male	no	no	21.5		116	70		75		0	2	2	7	3
17	male	yes	yes	21		110	66		80		1	1	3	4	3
17	male	no	no	19		110	68		83		1	2	2	7	2
17	female	no	no	18		110	70		85		0	3	4	7	3
17	female	yes	yes	15.64		118	70		83		0	0	4	4	1
17	female	yes	yes	19.11		120	86		82		0	0	7	7	2
17	female	no	no	23.5		110	70		82		0	0	2	7	5
17	female	yes	yes	20.22		110	70		83		0	3	3	7	3
17	female	yes	no	25.2	overweight	120	70		72		2	1	2	7	7
17	female	no	no	19		116	74		73		0	2	7	6	2
17	female	yes	yes	23		116	74		74		1	2	2	5	5
17	female	yes	no	25	overweight	118	70		75		0	3	2	7	7
17	female	no	yes	17		114	70		76		0	3	7	4	2
17	female	yes	no	17		114	70		78		1	3	7	7	2
17	female	no	no	15.38		110	70		75		0	2	4	7	2
17	female	no	yes	22.3		110	72		76		0	1	4	7	4
17	female	yes	yes	23		114	72		74		0	0	7	5	4
17	female	yes	no	19.7		118	76		70		0	2	7	6	3
17	female	no	no	18.65		116	74		70		2	1	5	7	2
17	female	no	no	18.3		112	70		83		0	2	5	7	2
17	female	yes	yes	16		110	70		122	PRE DIABETES	2	1	3	7	3
17	female	no	yes	31	obese	132	90	SBP,DBP-HIGH NORMAL	69		1	3	7	7	5
17	femal	no	no	15.4		100	68		68		0	3	5	7	2

	e														
17	female	yes	yes	17.53		110	68		72		0	2	7	7	2
16	male	yes	yes	16		100	70		71		3	2	2	4	2
16	male	no	no	21		100	70		79		1	1	3	7	4
16	male	yes	no	17.9		110	70		70		5	0	7	7	2
16	male	yes	yes	16.8		136	94	HT	78		0	3	2	7	4
16	male	no	no	15.07		110	70		77		2	4	2	4	2
16	male	yes	no	17.07		110	70		77		0	1	4	5	4
16	male	yes	no	15		100	70		77		1	1	7	6	2
16	male	no	no	16.27		100	66		69		0	1	3	7	4
16	male	no	no	19.46		110	68		79		2	0	2	7	7
16	male	no	no	17.9		118	72		78		0	0	7	5	3
16	male	yes	no	19.08		116	70		74		0	0	4	7	4
16	male	no	no	15.84		118	70		72		5	2	2	6	2
16	male	no	no	14.88		114	70		73		0	1	3	5	1
16	male	no	no	20.08		120	78		74		3	2	7	5	5
16	male	no	no	20.89		124	78		75		0	1	2	5	4
16	male	no	yes	16.04		118	78		75		5	3	2	7	2
16	male	no	yes	18.2		100	70		74		4	3	2	7	3
16	male	yes	no	27.8	overweight	110	80	DBP-HIGH NORMAL	74		0	3	7	7	5
16	male	yes	yes	19		110	70		118	PRE DIABETES	0	0	4	7	4
16	male	no	yes	17.1		100	70		68		2	1	4	7	2
16	male	no	no	31.2	obese	130	78	SBP-HIGH NORMAL	69		0	4	5	5	7
16	male	no	no	17		98	64		74		2	2	7	5	2
16	male	yes	yes	20.3		118	74		75		0	1	2	7	3
16	female	no	no	16.9		116	70		76		4	2	3	7	2
16	female	no	yes	21		114	70		73		0	2	7	5	4
16	female	yes	yes	18.3		100	66		77		0	1	4	4	4
16	female	no	yes	28.9	overweight	110	68		78		5	4	5	7	6
16	female	no	yes	17.1		110	70		74		1	2	2	7	2
16	female	yes	yes	17		110	70		84		0	1	4	7	4
16	female	yes	yes	16.9		110	70		83		4	2	3	7	2
16	female	no	no	20		110	68		78		1	2	2	7	3
16	female	no	no	23.1		120	66		79		2	2	2	7	4
16	female	no	no	22		100	66		76		2	3	2	7	3
16	female	yes	no	27	overweight	98	64		77		0	4	7	7	7
16	female	no	yes	18.9		98	66		75		4	3	4	7	3
16	female	no	no	16.6		100	70		74		0	2	5	4	2
16	female	no	no	16		110	70		73		0	4	7	5	2
16	female	no	no	17.6		110	74		72		0	1	7	3	2
16	female	no	no	18		110	80		73		2	4	3	7	3
16	female	no	no	15.7		120	80		75		0	3	4	7	1
16	female	no	yes	26.3	overweight	120	86		120	PRE DIABETES	2	2	2	7	7
16	female	no	yes	19.7		118	70		72		0	3	2	4	4
15	male	yes	no	16.6		116	70		73		3	2	2	5	2
15	male	yes	yes	26.4	overweight	114	70		74		0	4	2	7	5
15	male	no	no	15.78		118	70		74		0	1	7	5	1
15	male	no	no	18.38		114	70		74		4	2	4	5	2
15	male	yes	yes	16.79		116	74		75		5	3	7	5	2
15	male	no	yes	20.72		120	74		76		4	4	3	7	5
15	male	no	yes	18.6		110	68		75		0	1	4	7	3
15	male	yes	no	16.1		110	68		77		4	2	2	7	2
15	male	no	yes	30	obese	130	80	SBP,DBP-HIGH NORMAL	68		2	3	5	6	7
15	male	yes	yes	19.5		110	66		67		0	3	7	5	4
15	male	no	no	17		110	70		69		3	4	6	4	2
15	male	no	no	15.27		114	70		66		0	2	7	7	2
15	male	no	no	15.95		114	70		72		5	1	6	5	2
15	male	no	no	20.22		126	74	SBP-HIGH NORMAL	71		0	2	6	7	4
15	male	no	yes	19		120	74		72		0	1	6	7	3
15	male	no	no	17.7		110	66		73		0	2	7	7	2
15	male	no	no	21		110	66		74		1	1	7	5	3
15	male	no	no	16.5		118	74		75		0	2	5	4	2
15	male	yes	yes	22.1		110	68		76		4	2	7	5	4
15	male	no	no	18.5		110	70		71		5	2	4	7	2
15	male	no	no	17.9		110	70		72		3	2	2	7	2
15	male	no	yes	20.2		110	70		73		1	3	4	5	3
15	male	yes	yes	24	overweight	110	70		73		2	2	3	5	4
15	male	yes	no	17		98	66		74		0	2	2	6	2
15	female	yes	yes	19.4		110	68		75		5	3	7	5	2
15	female	no	yes	15.5		100	68		76		2	2	2	7	1
15	female	yes	no	28.8	obese	100	66		77		0	3	3	5	5
15	female	yes	yes	20.61		98	64		71		0	2	7	7	3
15	female	no	no	24.5	overweight	100	68		72		0	2	2	7	4
15	female	no	yes	18.6		98	66		73		3	3	3	7	3
15	female	yes	no	18.11		110	74		74		1	4	7	7	3
15	female	no	no	23.8	overweight	110	68		75		0	4	3	7	7
15	female	no	no	19.4		112	68		76		1	2	7	7	3

15	female	no	no	18.9		114	68		77	0	1	7	7	3
15	female	no	no	16.06		100	64		78	0	2	2	5	3
15	female	no	no	21		98	64		71	2	2	3	7	4
15	female	no	no	17.08		96	64		72	0	2	2	7	3
15	female	no	no	27	overweight	110	70		73	0	4	3	7	5
15	female	yes	yes	19		110	70		74	2	4	7	7	3
15	female	no	yes	26	overweight	110	70		67	0	3	4	4	6
15	female	no	no	19.8		100	70		68	1	2	7	4	3
15	female	no	yes	20.3		100	66		69	0	2	5	7	3
14	male	no	no	17.1		100	70		66	3	5	6	7	2
14	male	no	no	14.76		100	70		65	0	2	3	7	1
14	male	yes	no	16.9		100	68		67	4	2	7	7	2
14	male	no	no	20.3		126	80	SBP,DBP-HIGH NORMAL	68	5	2	7	7	3
14	male	no	no	18.6		116	70		69	0	2	4	7	4
14	male	no	no	17.5		106	70		65	0	1	4	7	7
14	male	yes	yes	16.4		110	70		66	0	1	3	7	2
14	male	no	no	16		110	70		67	4	0	4	7	4
14	male	no	yes	15		110	70		68	0	0	2	4	3
14	male	no	no	19.05		116	68		69	0	0	2	7	3
14	male	yes	yes	17.08		100	70		70	1	2	2	6	2
14	male	yes	no	28	obese	126	70	SBP-HIGH NORMAL	71	4	3	2	7	2
14	female	no	no	18		110	68		72	0	2	3	6	2
14	female	no	no	14.6		116	74		73	0	3	7	7	2
14	female	yes	yes	18.01		100	70		74	0	2	2	7	4
14	female	yes	yes	25	overweight	104	70		75	0	3	2	7	3
14	female	no	no	17.6		100	68		76	2	3	2	7	3
14	female	no	no	19.9		100	68		77	3	2	2	7	3
14	female	no	no	17.3		108	68		78	2	2	2	7	3
14	female	no	no	16.8		106	68		72	1	2	4	7	2
14	female	yes	no	20.2		126	78	SBP,DBP-HIGH NORMAL	73	0	2	5	7	6
14	female	no	yes	15		100	70		74	3	2	3	5	2
14	female	no	yes	16.5		100	70		75	0	2	2	7	2
13	male	yes	yes	22	overweight	106	66		76	2	2	7	7	7
13	male	yes	yes	17.3		102	66		67	0	4	3	5	3
13	male	no	no	16.5		100	68		68	1	2	4	4	3
13	male	no	no	15.6		110	70		69	4	4	4	7	3
13	male	no	no	15.8		106	68		65	5	2	4	7	5
13	male	yes	no	19.5		108	68		66	0	2	7	7	3
13	male	yes	yes	16		100	70		67	4	2	4	7	2
13	male	yes	yes	17.3		100	70		67	1	2	3	7	3
13	male	no	no	23.4	overweight	110	70		68	0	2	4	7	7
13	male	no	no	19.4		110	70		69	5	4	3	7	3
13	male	no	yes	16		110	70		65	2	2	7	7	3
13	male	no	no	19.5		100	68		78	2	2	2	7	2
13	male	no	no	18		98	68		76	2	2	2	7	2
13	female	no	yes	25	overweight	98	68		75	0	2	2	7	2
13	female	no	yes	17		100	70		74	0	3	2	7	2
13	female	no	no	21		106	66		73	0	2	1	7	3
13	female	no	no	23	overweight	104	68		72	1	2	2	7	5
13	female	no	no	20.5		100	66		78	3	1	3	5	3
13	female	no	yes	17.7		98	66		79	0	2	4	7	2
13	female	no	no	15.3		98	64		84	2	1	5	7	2
13	female	no	no	18.4		96	66		85	1	1	4	7	3
13	female	no	no	16.06		100	72		88	3	2	5	7	2
13	female	yes	yes	18.1		98	68		82	0	4	5	7	3
12	male	yes	yes	17.1		98	66		89	0	3	7	7	2
12	male	yes	no	16.7		100	68		86	0	2	4	7	3
12	male	no	no	16		100	70		84	5	1	3	7	2
12	male	no	no	19.3		100	70		94	5	1	5	7	7
12	male	yes	yes	22	overweight	100	68		93	0	3	4	7	5
12	male	no	no	17.4		98	68		92	0	2	7	7	3
12	male	no	no	19		96	66		65	0	2	2	5	2
12	male	no	no	16.3		100	70		67	0	2	2	6	2
12	female	no	yes	17.4		96	68		73	2	2	2	4	2
12	female	no	yes	19		98	66		72	2	2	4	7	3
12	female	no	yes	15.3		98	70		69	0	2	5	7	2
12	female	yes	no	17.4		100	66		66	2	2	2	7	2
12	female	no	no	20		100	68		72	2	1	7	7	5
18	male	no	no	17		120	78		88	0	2	3	7	2
18	male	no	yes	16.6		120	78		86	2	1	2	7	2
18	male	yes	yes	18.64		110	76		87	2	2	7	7	4
18	male	yes	yes	29	overweight	120	80	DBP-HIGH NORMAL	92	0	3	4	4	7
18	male	yes	yes	19.3		120	70		79	2	2	3	5	4
18	male	no	no	18		118	76		80	5	1	2	7	2
18	male	yes	no	27.2	overweight	146	90	HT	78	2	3	2	7	7

18	male	no	yes	21		120	70		76		6	4	7	3	4
18	male	no	no	17		116	70		78		2	3	7	7	2
18	female	yes	yes	35.49	obese	130	70	SBP-HIGH NORMAL	120	PRE DIABETES	0	5	1	4	7
18	female	no	no	21.25		122	70		80		0	3	6	5	4
18	female	yes	yes	16		100	70		90		2	4	2	6	2
18	female	yes	no	28	overweight	114	70		78		0	2	3	7	7
18	female	no	no	18.2		110	74		75		2	3	4	7	3
18	female	no	no	25.2	overweight	130	90	SBP,DBP-HIGH NORMAL	74		0	3	7	7	4
18	female	no	yes	19.8		110	70		85		0	2	7	7	3
17	male	no	no	19.3		120	70		84		2	2	3	4	3
17	male	no	no	15.95		120	74		93		3	2	2	5	2
17	male	yes	yes	27.2	overweight	140	90	SBP,DBP-HIGH NORMAL	92		0	2	3	7	5
17	male	no	yes	32	obese	146	100	HT	117	PRE DIABETES	2	3	7	7	7
17	male	yes	yes	18.3		118	70		90		0	0	2	5	3
17	male	no	no	16.9		110	70		80		0	0	1	5	4
17	male	no	no	17.4		120	78		70		0	0	3	7	2
17	male	no	yes	17.5		114	70		91		2	2	4	7	7
17	male	yes	no	19.4		116	74		68		2	2	5	7	4
17	male	no	yes	16.21		118	70		74		0	3	7	7	2
17	male	no	no	18.15		130	80	SBP,DBP-HIGH NORMAL	72		0	2	3	7	7
17	male	no	no	18.35		128	80	SBP,DBP-HIGH NORMAL	73		0	3	4	7	3
17	male	no	yes	23.89		122	78		74		0	2	2	7	6
17	male	no	no	25.89	overweight	110	70		75		2	4	2	5	7
17	male	no	no	18.38		110	70		76		5	3	2	4	2
17	male	yes	yes	25.65	overweight	130	100	HT	119	PRE DIABETES	2	3	7	7	4
17	male	no	no	18.65		120	74		80		6	1	2	7	3
17	male	no	yes	25.42	overweight	110	70		82		2	2	2	7	7
17	male	no	yes	20.3		120	76		83		0	2	2	7	3
17	male	no	no	24.93	overweight	136	90	SBP-HIGH NORMAL	84		2	1	7	7	4
17	male	no	yes	18.4		116	70		82		1	2	1	7	3
17	male	yes	yes	17.6		116	76		72		0	2	3	7	2
17	male	yes	no	22		118	70		73		6	2	7	4	3
17	male	no	no	23.8		114	74		71		2	1	4	4	4
17	male	no	yes	32	obese	136	98	HT	74		0	1	3	5	7
17	male	yes	no	21.4		116	70		74		1	1	2	5	4
17	male	no	yes	16.3		110	70		74		0	0	7	7	3
17	male	yes	yes	25.8	overweight	110	68		75		2	2	3	7	5
17	male	no	no	26.3	overweight	120	74		76		0	2	7	7	5
17	male	no	no	22.6		120	74		73		0	4	2	5	3
17	male	yes	yes	28	overweight	118	70		74		0	3	2	7	5
17	male	no	no	21.5		116	70		75		0	2	2	7	3
17	male	yes	yes	21		110	66		80		1	1	3	4	3
17	male	no	no	19		110	68		83		1	2	2	7	2
17	female	no	no	18		110	70		85		0	3	4	7	3
17	female	yes	yes	15.64		118	70		83		0	0	4	4	1
17	female	yes	yes	19.11		120	86		82		0	0	7	7	2
17	female	no	no	23.5		110	70		82		0	0	2	7	5
17	female	yes	yes	20.22		110	70		83		0	3	3	7	3
17	female	yes	no	25.2	overweight	120	70		72		2	1	2	7	7
17	female	no	no	19		116	74		73		0	2	7	6	2
17	female	yes	yes	23		116	74		74		1	2	2	5	5
17	female	yes	no	25	overweight	118	70		75		0	3	2	7	7
17	female	no	yes	17		114	70		76		0	3	7	4	2
17	female	yes	no	17		114	70		78		1	3	7	7	2
17	female	no	no	15.38		110	70		75		0	2	4	7	2
17	female	no	yes	22.3		110	72		76		0	1	4	7	4
17	female	yes	yes	23		114	72		74		0	0	7	5	4
17	female	yes	no	19.7		118	76		70		0	2	7	6	3
17	female	no	no	18.65		116	74		70		2	1	5	7	2
17	female	no	no	18.3		112	70		83		0	2	5	7	2
17	female	yes	yes	16		110	70		122	PRE DIABETES	2	1	3	7	3
17	female	no	yes	31	obese	132	90	SBP,DBP-HIGH NORMAL	69		1	3	7	7	5
17	female	no	no	15.4		100	68		68		0	3	5	7	2
17	female	yes	yes	17.53		110	68		72		0	2	7	7	2
16	male	yes	yes	16		100	70		71		3	2	2	4	2
16	male	no	no	21		100	70		79		1	1	3	7	4
16	male	yes	no	17.9		110	70		70		5	0	7	7	2
16	male	yes	yes	16.8		136	94	HT	78		0	3	2	7	4
16	male	no	no	15.07		110	70		77		2	4	2	4	2
16	male	yes	no	17.07		110	70		77		0	1	4	5	4
16	male	yes	no	15		100	70		77		1	1	7	6	2
16	male	no	no	16.27		100	66		69		0	1	3	7	4
16	male	no	no	19.46		110	68		79		2	0	2	7	7
16	male	no	no	17.9		118	72		78		0	0	7	5	3
16	male	yes	no	19.08		116	70		74		0	0	4	7	4
16	male	no	no	15.84		118	70		72		5	2	2	6	2
16	male	no	no	14.88		114	70		73		0	1	3	5	1

16	male	no	no	20.08		120	78		74		3	2	7	5	5
16	male	no	no	20.89		124	78		75		0	1	2	5	4
16	male	no	yes	16.04		118	78		75		5	3	2	7	2
16	male	no	yes	18.2		100	70		74		4	3	2	7	3
16	male	yes	no	27.8	overweight	110	80	DBP-HIGH NORMAL	74		0	3	7	7	5
16	male	yes	yes	19		110	70		118	PRE DIABETES	0	0	4	7	4
16	male	no	yes	17.1		100	70		68		2	1	4	7	2
16	male	no	no	31.2	obese	130	78	SBP-HIGH NORMAL	69		0	4	5	5	7
16	male	no	no	17		98	64		74		2	2	7	5	2
16	male	yes	yes	20.3		118	74		75		0	1	2	7	3
16	female	no	no	16.9		116	70		76		4	2	3	7	2
16	female	no	yes	21		114	70		73		0	2	7	5	4
16	female	yes	yes	18.3		100	66		77		0	1	4	4	4
16	female	no	yes	28.9	overweight	110	68		78		5	4	5	7	6
16	female	no	yes	17.1		110	70		74		1	2	2	7	2
16	female	yes	yes	17		110	70		84		0	1	4	7	4
16	female	yes	yes	16.9		110	70		83		4	2	3	7	2
16	female	no	no	20		110	68		78		1	2	2	7	3
16	female	no	no	23.1		120	66		79		2	2	2	7	4
16	female	no	no	22		100	66		76		2	3	2	7	3
16	female	yes	no	27	overweight	98	64		77		0	4	7	7	7
16	female	no	yes	18.9		98	66		75		4	3	4	7	3
16	female	no	no	16.6		100	70		74		0	2	5	4	2
16	female	no	no	16		110	70		73		0	4	7	5	2
16	female	no	no	17.6		110	74		72		0	1	7	3	2
16	female	no	no	18		110	80		73		2	4	3	7	3
16	female	no	no	15.7		120	80		75		0	3	4	7	1
16	female	no	yes	26.3	overweight	120	86		120	PRE DIABETES	2	2	2	7	7
16	female	no	yes	19.7		118	70		72		0	3	2	4	4
15	male	yes	no	16.6		116	70		73		3	2	2	5	2
15	male	yes	yes	26.4	overweight	114	70		74		0	4	2	7	5
15	male	no	no	15.78		118	70		74		0	1	7	5	1
15	male	no	no	18.38		114	70		74		4	2	4	5	2
15	male	yes	yes	16.79		116	74		75		5	3	7	5	2
15	male	no	yes	20.72		120	74		76		4	4	3	7	5
15	male	no	yes	18.6		110	68		75		0	1	4	7	3
15	male	yes	no	16.1		110	68		77		4	2	2	7	2
15	male	no	yes	30	obese	130	80	SBP,DBP-HIGH NORMAL	68		2	3	5	6	7
15	male	yes	yes	19.5		110	66		67		0	3	7	5	4
15	male	no	no	17		110	70		69		3	4	6	4	2
15	male	no	no	15.27		114	70		66		0	2	7	7	2
15	male	no	no	15.95		114	70		72		5	1	6	5	2
15	male	no	no	20.22		126	74	SBP-HIGH NORMAL	71		0	2	6	7	4
15	male	no	yes	19		120	74		72		0	1	6	7	3
15	male	no	no	17.7		110	66		73		0	2	7	7	2
15	male	no	no	21		110	66		74		1	1	7	5	3
15	male	no	no	16.5		118	74		75		0	2	5	4	2
15	male	yes	yes	22.1		110	68		76		4	2	7	5	4
15	male	no	no	18.5		110	70		71		5	2	4	7	2
15	male	no	no	17.9		110	70		72		3	2	2	7	2
15	male	no	yes	20.2		110	70		73		1	3	4	5	3
15	male	yes	yes	24	overweight	110	70		73		2	2	3	5	4
15	male	yes	no	17		98	66		74		0	2	2	6	2
15	female	yes	yes	19.4		110	68		75		5	3	7	5	2
15	female	no	yes	15.5		100	68		76		2	2	2	7	1
15	female	yes	no	28.8	obese	100	66		77		0	3	3	5	5
15	female	yes	yes	20.61		98	64		71		0	2	7	7	3
15	female	no	no	24.5	overweight	100	68		72		0	2	2	7	4
15	female	no	yes	18.6		98	66		73		3	3	3	7	3
15	female	yes	no	18.11		110	74		74		1	4	7	7	3
15	female	no	no	23.8	overweight	110	68		75		0	4	3	7	7
15	female	no	no	19.4		112	68		76		1	2	7	7	3
15	female	no	no	18.9		114	68		77		0	1	7	7	3
15	female	no	no	16.06		100	64		78		0	2	2	5	3
15	female	no	no	21		98	64		71		2	2	3	7	4
15	female	no	no	17.08		96	64		72		0	2	2	7	3
15	female	no	no	27	overweight	110	70		73		0	4	3	7	5
15	female	yes	yes	19		110	70		74		2	4	7	7	3
15	female	no	yes	26	overweight	110	70		67		0	3	4	4	6
15	female	no	no	19.8		100	70		68		1	2	7	4	3
15	female	no	yes	20.3		100	66		69		0	2	5	7	3
14	male	no	no	17.1		100	70		66		3	5	6	7	2
14	male	no	no	14.76		100	70		65		0	2	3	7	1
14	male	yes	no	16.9		100	68		67		4	2	7	7	2
14	male	no	no	20.3		126	80	SBP,DBP-HIGH NORMAL	68		5	2	7	7	3
14	male	no	no	18.6		116	70		69		0	2	4	7	4

14	male	no	no	17.5		106	70		65		0	1	4	7	7
14	male	yes	yes	16.4		110	70		66		0	1	3	7	2
14	male	no	no	16		110	70		67		4	0	4	7	4
14	male	no	yes	15		110	70		68		0	0	2	4	3
14	male	no	no	19.05		116	68		69		0	0	2	7	3
14	male	yes	yes	17.08		100	70		70		1	2	2	6	2
14	male	yes	no	28	obese	126	70	SBP-HIGH NORMAL	71		4	3	2	7	2
14	female	no	no	18		110	68		72		0	2	3	6	2
14	female	no	no	14.6		116	74		73		0	3	7	7	2
14	female	yes	yes	18.01		100	70		74		0	2	2	7	4
14	female	yes	yes	25	overweight	104	70		75		0	3	2	7	3
14	female	no	no	17.6		100	68		76		2	3	2	7	3
14	female	no	no	19.9		100	68		77		3	2	2	7	3
14	female	no	no	17.3		108	68		78		2	2	2	7	3
14	female	no	no	16.8		106	68		72		1	2	4	7	2
14	female	yes	no	20.2		126	78	SBP,DBP-HIGH NORMAL	73		0	2	5	7	6
14	female	no	yes	15		100	70		74		3	2	3	5	2
14	female	no	yes	16.5		100	70		75		0	2	2	7	2
13	male	yes	yes	22	overweight	106	66		76		2	2	7	7	7
13	male	yes	yes	17.3		102	66		67		0	4	3	5	3
13	male	no	no	16.5		100	68		68		1	2	4	4	3
13	male	no	no	15.6		110	70		69		4	4	4	7	3
13	male	no	no	15.8		106	68		65		5	2	4	7	5
13	male	yes	no	19.5		108	68		66		0	2	7	7	3
13	male	yes	yes	16		100	70		67		4	2	4	7	2
13	male	yes	yes	17.3		100	70		67		1	2	3	7	3
13	male	no	no	23.4	overweight	110	70		68		0	2	4	7	7
13	male	no	no	19.4		110	70		69		5	4	3	7	3
13	male	no	yes	16		110	70		65		2	2	7	7	3
13	male	no	no	19.5		100	68		78		2	2	2	7	2
13	male	no	no	18		98	68		76		2	2	2	7	2
13	female	no	yes	25	overweight	98	68		75		0	2	2	7	2
13	female	no	yes	17		100	70		74		0	3	2	7	2
13	female	no	no	21		106	66		73		0	2	1	7	3
13	female	no	no	23	overweight	104	68		72		1	2	2	7	5
13	female	no	no	20.5		100	66		78		3	1	3	5	3
13	female	no	yes	17.7		98	66		79		0	2	4	7	2
13	female	no	no	15.3		98	64		84		2	1	5	7	2
13	female	no	no	18.4		96	66		85		1	1	4	7	3
13	female	no	no	16.06		100	72		88		3	2	5	7	2
13	female	yes	yes	18.1		98	68		82		0	4	5	7	3
12	male	yes	yes	17.1		98	66		89		0	3	7	7	2
12	male	yes	no	16.7		100	68		86		0	2	4	7	3
12	male	no	no	16		100	70		84		5	1	3	7	2
12	male	no	no	19.3		100	70		94		5	1	5	7	7
12	male	yes	yes	22	overweight	100	68		93		0	3	4	7	5
12	male	no	no	17.4		98	68		92		0	2	7	7	3
12	male	no	no	19		96	66		65		0	2	2	5	2
12	male	no	no	16.3		100	70		67		0	2	2	6	2
12	female	no	yes	17.4		96	68		73		2	2	2	4	2
12	female	no	yes	19		98	66		72		2	2	4	7	3
12	female	no	yes	15.3		98	70		69		0	2	5	7	2
12	female	yes	no	17.4		100	66		66		2	2	2	7	2
12	female	no	no	20		100	68		72		2	1	7	7	5
18	male	no	no	17		120	78		88		0	2	3	7	2
18	male	no	yes	16.6		120	78		86		2	1	2	7	2
18	male	yes	yes	18.64		110	76		87		2	2	7	7	4
18	male	yes	yes	29	overweight	120	80	DBP-HIGH NORMAL	92		0	3	4	4	7
18	male	yes	yes	19.3		120	70		79		2	2	3	5	4
18	male	no	no	18		118	76		80		5	1	2	7	2
18	male	yes	no	27.2	overweight	146	90	HT	78		2	3	2	7	7
18	male	no	yes	21		120	70		76		6	4	7	3	4
18	male	no	no	17		116	70		78		2	3	7	7	2
18	female	yes	yes	35.49	obese	130	70	SBP-HIGH NORMAL	120	PRE DIABETES	0	5	1	4	7
18	female	no	no	21.25		122	70		80		0	3	6	5	4
18	female	yes	yes	16		100	70		90		2	4	2	6	2
18	female	yes	no	28	overweight	114	70		78		0	2	3	7	7
18	female	no	no	18.2		110	74		75		2	3	4	7	3
18	female	no	no	25.2	overweight	130	90	SBP,DBP-HIGH NORMAL	74		0	3	7	7	4
18	female	no	yes	19.8		110	70		85		0	2	7	7	3
17	male	no	no	19.3		120	70		84		2	2	3	4	3
17	male	no	no	15.95		120	74		93		3	2	2	5	2
17	male	yes	yes	27.2	overweight	140	90	SBP,DBP-HIGH NORMAL	92		0	2	3	7	5
17	male	no	yes	32	obese	146	100	HT	117	PRE DIABETES	2	3	7	7	7
17	male	yes	yes	18.3		118	70		90		0	0	2	5	3
17	male	no	no	16.9		110	70		80		0	0	1	5	4
17	male	no	no	17.4		120	78		70		0	0	3	7	2
17	male	no	yes	17.5		114	70		91		2	2	4	7	7
17	male	yes	no	19.4		116	74		68		2	2	5	7	4
17	male	no	yes	16.2		118	70		74		0	3	7	7	2

17	male	no	no	18.15		130	80	SBP,DBP-HIGH NORMAL	72		0	2	3	7	7
17	male	no	no	18.35		128	80	SBP,DBP-HIGH NORMAL	73		0	3	4	7	3
17	male	no	yes	23.89		122	78		74		0	2	2	7	6
17	male	no	no	25.89	overweight	110	70		75		2	4	2	5	7
17	male	no	no	18.38		110	70		76		5	3	2	4	2
17	male	yes	yes	25.69	overweight	130	100	HT	119	PRE DIABETES	2	3	7	7	4
17	male	no	no	18.65		120	74		80		6	1	2	7	3
17	male	no	yes	25.42	overweight	110	70		82		2	2	2	7	7
17	male	no	yes	20.33		120	76		83		0	2	2	7	3
17	male	no	no	24.93	overweight	136	90	SBP-HIGH NORMAL	84		2	1	7	7	4
17	male	no	yes	18.4		116	70		82		1	2	1	7	3
17	male	yes	yes	17.6		116	76		72		0	2	3	7	2
17	male	yes	no	22		118	70		73		6	2	7	4	3
17	male	no	no	23.8		114	74		71		2	1	4	4	4
17	male	no	yes	32	obese	136	98	HT	74		0	1	3	5	7
17	male	yes	no	21.4		116	70		74		1	1	2	5	4
17	male	no	yes	16.3		110	70		74		0	0	7	7	3
17	male	yes	yes	25.8	overweight	110	68		75		2	2	3	7	5
17	male	no	no	26.3	overweight	120	74		76		0	2	7	7	5
17	male	no	no	22.6		120	74		73		0	4	2	5	3
17	male	yes	yes	28	overweight	118	70		74		0	3	2	7	5
17	male	no	no	21.5		116	70		75		0	2	2	7	3
17	male	yes	yes	21		110	66		80		1	1	3	4	3
17	male	no	no	19		110	68		83		1	2	2	7	2
17	femal e	no	no	18		110	70		85		0	3	4	7	3
17	femal e	yes	yes	15.64		118	70		83		0	0	4	4	1
17	femal e	yes	yes	19.11		120	86		82		0	0	7	7	2
17	femal e	no	no	23.5		110	70		82		0	0	2	7	5
17	femal e	yes	yes	20.22		110	70		83		0	3	3	7	3
17	femal e	yes	no	25.2	overweight	120	70		72		2	1	2	7	7
17	femal e	no	no	19		116	74		73		0	2	7	6	2
17	femal e	yes	yes	23		116	74		74		1	2	2	5	5
17	femal e	yes	no	25	overweight	118	70		75		0	3	2	7	7
17	femal e	no	yes	17		114	70		76		0	3	7	4	2
17	femal e	yes	no	17		114	70		78		1	3	7	7	2
17	femal e	no	no	15.38		110	70		75		0	2	4	7	2
17	femal e	no	yes	22.3		110	72		76		0	1	4	7	4
17	femal e	yes	yes	23		114	72		74		0	0	7	5	4
17	femal e	yes	no	19.7		118	76		70		0	2	7	6	3
17	femal e	no	no	18.65		116	74		70		2	1	5	7	2
17	femal e	no	no	18.3		112	70		83		0	2	5	7	2
17	femal e	yes	yes	16		110	70		122	PRE DIABETES	2	1	3	7	3
17	femal e	no	yes	31	obese	132	90	SBP,DBP-HIGH NORMAL	69		1	3	7	7	5
17	femal e	no	no	15.4		100	68		68		0	3	5	7	2
17	femal e	yes	yes	17.53		110	68		72		0	2	7	7	2
16	male	yes	yes	16		100	70		71		3	2	2	4	2
16	male	no	no	21		100	70		79		1	1	3	7	4
16	male	yes	no	17.9		110	70		70		5	0	7	7	2
16	male	yes	yes	16.8		136	94	HT	78		0	3	2	7	4
16	male	no	no	15.07		110	70		77		2	4	2	4	2
16	male	yes	no	17.07		110	70		77		0	1	4	5	4
16	male	yes	no	15		100	70		77		1	1	7	6	2
16	male	no	no	16.27		100	66		69		0	1	3	7	4
16	male	no	no	19.46		110	68		79		2	0	2	7	7
16	male	no	no	17.9		118	72		78		0	0	7	5	3
16	male	yes	no	19.08		116	70		74		0	0	4	7	4
16	male	no	no	15.84		118	70		72		5	2	2	6	2
16	male	no	no	14.88		114	70		73		0	1	3	5	1
16	male	no	no	20.08		120	78		74		3	2	7	5	5
16	male	no	no	20.89		124	78		75		0	1	2	5	4
16	male	no	yes	16.04		118	78		75		5	3	2	7	2
16	male	no	yes	18.2		100	70		74		4	3	2	7	3
16	male	yes	no	27.8	overweight	110	80	DBP-HIGH NORMAL	74		0	3	7	7	5
16	male	yes	yes	19		110	70		118	PRE DIABETES	0	0	4	7	4
16	male	no	yes	17.1		100	70		68		2	1	4	7	2
16	male	no	no	31.2	obese	130	78	SBP-HIGH NORMAL	69		0	4	5	5	7
16	male	no	no	17		98	64		74		2	2	7	5	2
16	male	yes	yes	20.3		118	74		75		0	1	2	7	3
16	femal e	no	no	16.9		116	70		76		4	2	3	7	2
16	femal e	no	yes	21		114	70		73		0	2	7	5	4
16	femal e	yes	yes	18.3		100	66		77		0	1	4	4	4
16	femal e	no	yes	28.9	overweight	110	68		78		5	4	5	7	6
16	femal e	no	yes	17.1		110	70		74		1	2	2	7	2
16	femal e	yes	yes	17		110	70		84		0	1	4	7	4
16	femal e	yes	yes	16.9		110	70		83		4	2	3	7	2
16	femal	no	no	20		110	68		78		1	2	2	7	3

	e															
16	female	no	no	23.1		120	66		79		2	2	2	7	4	
16	female	no	no	22		100	66		76		2	3	2	7	3	
16	female	yes	no	27	overweight	98	64		77		0	4	7	7	7	
16	female	no	yes	18.9		98	66		75		4	3	4	7	3	
16	female	no	no	16.6		100	70		74		0	2	5	4	2	
16	female	no	no	16		110	70		73		0	4	7	5	2	
16	female	no	no	17.6		110	74		72		0	1	7	3	2	
16	female	no	no	18		110	80		73		2	4	3	7	3	
16	female	no	no	15.7		120	80		75		0	3	4	7	1	
16	female	no	yes	26.3	overweight	120	86		120	PRE DIABETES	2	2	2	7	7	
16	female	no	yes	19.7		118	70		72		0	3	2	4	4	
15	male	yes	no	16.6		116	70		73		3	2	2	5	2	
15	male	yes	yes	26.4	overweight	114	70		74		0	4	2	7	5	
15	male	no	no	15.78		118	70		74		0	1	7	5	1	
15	male	no	no	18.38		114	70		74		4	2	4	5	2	
15	male	yes	yes	16.79		116	74		75		5	3	7	5	2	
15	male	no	yes	20.72		120	74		76		4	4	3	7	5	
15	male	no	yes	18.6		110	68		75		0	1	4	7	3	
15	male	yes	no	16.1		110	68		77		4	2	2	7	2	
15	male	no	yes	30	obese	130	80	SBP,DBP-HIGH NORMAL	68		2	3	5	6	7	
15	male	yes	yes	19.5		110	66		67		0	3	7	5	4	
15	male	no	no	17		110	70		69		3	4	6	4	2	
15	male	no	no	15.27		114	70		66		0	2	7	7	2	
15	male	no	no	15.95		114	70		72		5	1	6	5	2	
15	male	no	no	20.22		126	74	SBP-HIGH NORMAL	71		0	2	6	7	4	
15	male	no	yes	19		120	74		72		0	1	6	7	3	
15	male	no	no	17.7		110	66		73		0	2	7	7	2	
15	male	no	no	21		110	66		74		1	1	7	5	3	
15	male	no	no	16.5		118	74		75		0	2	5	4	2	
15	male	yes	yes	22.1		110	68		76		4	2	7	5	4	
15	male	no	no	18.5		110	70		71		5	2	4	7	2	
15	male	no	no	17.9		110	70		72		3	2	2	7	2	
15	male	no	yes	20.2		110	70		73		1	3	4	5	3	
15	male	yes	yes	24	overweight	110	70		73		2	2	3	5	4	
15	male	yes	no	17		98	66		74		0	2	2	6	2	
15	female	yes	yes	19.4		110	68		75		5	3	7	5	2	
15	female	no	yes	15.5		100	68		76		2	2	2	7	1	
15	female	yes	no	28.8	obese	100	66		77		0	3	3	5	5	
15	female	yes	yes	20.61		98	64		71		0	2	7	7	3	
15	female	no	no	24.5	overweight	100	68		72		0	2	2	7	4	
15	female	no	yes	18.6		98	66		73		3	3	3	7	3	
15	female	yes	no	18.11		110	74		74		1	4	7	7	3	
15	female	no	no	23.8	overweight	110	68		75		0	4	3	7	7	
15	female	no	no	19.4		112	68		76		1	2	7	7	3	
15	female	no	no	18.9		114	68		77		0	1	7	7	3	
15	female	no	no	16.06		100	64		78		0	2	2	5	3	
15	female	no	no	21		98	64		71		2	2	3	7	4	
15	female	no	no	17.08		96	64		72		0	2	2	7	3	
15	female	no	no	27	overweight	110	70		73		0	4	3	7	5	
15	female	yes	yes	19		110	70		74		2	4	7	7	3	
15	female	no	yes	26	overweight	110	70		67		0	3	4	4	6	
15	female	no	no	19.8		100	70		68		1	2	7	4	3	
15	female	no	yes	20.3		100	66		69		0	2	5	7	3	
14	male	no	no	17.1		100	70		66		3	5	6	7	2	
14	male	no	no	14.76		100	70		65		0	2	3	7	1	
14	male	yes	no	16.9		100	68		67		4	2	7	7	2	
14	male	no	no	20.3		126	80	SBP,DBP-HIGH NORMAL	68		5	2	7	7	3	
14	male	no	no	18.6		116	70		69		0	2	4	7	4	
14	male	no	no	17.5		106	70		65		0	1	4	7	7	
14	male	yes	yes	16.4		110	70		66		0	1	3	7	2	
14	male	no	no	16		110	70		67		4	0	4	7	4	
14	male	no	yes	15		110	70		68		0	0	2	4	3	
14	male	no	no	19.05		116	68		69		0	0	2	7	3	
14	male	yes	yes	17.08		100	70		70		1	2	2	6	2	
14	male	yes	no	28	obese	126	70	SBP-HIGH NORMAL	71		4	3	2	7	2	
14	female	no	no	18		110	68		72		0	2	3	6	2	
14	female	no	no	14.6		116	74		73		0	3	7	7	2	
14	female	yes	yes	18.01		100	70		74		0	2	2	7	4	
14	female	yes	yes	25	overweight	104	70		75		0	3	2	7	3	
14	female	no	no	17.6		100	68		76		2	3	2	7	3	
14	female	no	no	19.9		100	68		77		3	2	2	7	3	
14	female	no	no	17.3		108	68		78		2	2	2	7	3	
14	female	no	no	16.8		106	68		72		1	2	4	7	2	
14	female	yes	no	20.2		126	78	SBP,DBP-HIGH NORMAL	73		0	2	5	7	6	
14	female	no	yes	15		100	70		74		3	2	3	5	2	

14	female	no	yes	16.5		100	70		75		0	2	2	7	2
13	male	yes	yes	22	overweight	106	66		76		2	2	7	7	7
13	male	yes	yes	17.3		102	66		67		0	4	3	5	3
13	male	no	no	16.5		100	68		68		1	2	4	4	3
13	male	no	no	15.6		110	70		69		4	4	4	7	3
13	male	no	no	15.8		106	68		65		5	2	4	7	5
13	male	yes	no	19.5		108	68		66		0	2	7	7	3
13	male	yes	yes	16		100	70		67		4	2	4	7	2
13	male	yes	yes	17.3		100	70		67		1	2	3	7	3
13	male	no	no	23.4	overweight	110	70		68		0	2	4	7	7
13	male	no	no	19.4		110	70		69		5	4	3	7	3
13	male	no	yes	16		110	70		65		2	2	7	7	3
13	male	no	no	19.5		100	68		78		2	2	2	7	2
13	male	no	no	18		98	68		76		2	2	2	7	2
13	female	no	yes	25	overweight	98	68		75		0	2	2	7	2
13	female	no	yes	17		100	70		74		0	3	2	7	2
13	female	no	no	21		106	66		73		0	2	1	7	3
13	female	no	no	23	overweight	104	68		72		1	2	2	7	5
13	female	no	no	20.5		100	66		78		3	1	3	5	3
13	female	no	yes	17.7		98	66		79		0	2	4	7	2
13	female	no	no	15.3		98	64		84		2	1	5	7	2
13	female	no	no	18.4		96	66		85		1	1	4	7	3
13	female	no	no	16.06		100	72		88		3	2	5	7	2
13	female	yes	yes	18.1		98	68		82		0	4	5	7	3
12	male	yes	yes	17.1		98	66		89		0	3	7	7	2
12	male	yes	no	16.7		100	68		86		0	2	4	7	3
12	male	no	no	16		100	70		84		5	1	3	7	2
12	male	no	no	19.3		100	70		94		5	1	5	7	7
12	male	yes	yes	22	overweight	100	68		93		0	3	4	7	5
12	male	no	no	17.4		98	68		92		0	2	7	7	3
12	male	no	no	19		96	66		65		0	2	2	5	2
12	male	no	no	16.3		100	70		67		0	2	2	6	2
12	female	no	yes	17.4		96	68		73		2	2	2	4	2
12	female	no	yes	19		98	66		72		2	2	4	7	3
12	female	no	yes	15.3		98	70		69		0	2	5	7	2
12	female	yes	no	17.4		100	66		66		2	2	2	7	2
12	female	no	no	20		100	68		72		2	1	7	7	5
18	male	no	no	17		120	78		88		0	2	3	7	2
18	male	no	yes	16.6		120	78		86		2	1	2	7	2
18	male	yes	yes	18.64		110	76		87		2	2	7	7	4
18	male	yes	yes	29	overweight	120	80	DBP-HIGH NORMAL	92		0	3	4	4	7
18	male	yes	yes	19.3		120	70		79		2	2	3	5	4
18	male	no	no	18		118	76		80		5	1	2	7	2
18	male	yes	no	27.2	overweight	146	90	HT	78		2	3	2	7	7
18	male	no	yes	21		120	70		76		6	4	7	3	4
18	male	no	no	17		116	70		78		2	3	7	7	2
18	female	yes	yes	35.49	obese	130	70	SBP-HIGH NORMAL	120	PRE DIABETES	0	5	1	4	7
18	female	no	no	21.25		122	70		80		0	3	6	5	4
18	female	yes	yes	16		100	70		90		2	4	2	6	2
18	female	yes	no	28	overweight	114	70		78		0	2	3	7	7
18	female	no	no	18.2		110	74		75		2	3	4	7	3
18	female	no	no	25.2	overweight	130	90	SBP,DBP-HIGH NORMAL	74		0	3	7	7	4
18	female	no	yes	19.8		110	70		85		0	2	7	7	3
17	male	no	no	19.3		120	70		84		2	2	3	4	3
17	male	no	no	15.95		120	74		93		3	2	2	5	2
17	male	yes	yes	27.2	overweight	140	90	SBP,DBP-HIGH NORMAL	92		0	2	3	7	5
17	male	no	yes	32	obese	146	100	HT	117	PRE DIABETES	2	3	7	7	7
17	male	yes	yes	18.3		118	70		90		0	0	2	5	3
17	male	no	no	16.9		110	70		80		0	0	1	5	4
17	male	no	no	17.4		120	78		70		0	0	3	7	2
17	male	no	yes	17.5		114	70		91		2	2	4	7	7
17	male	yes	no	19.4		116	74		68		2	2	5	7	4
17	male	no	yes	16.21		118	70		74		0	3	7	7	2
17	male	no	no	18.15		130	80	SBP,DBP-HIGH NORMAL	72		0	2	3	7	7
17	male	no	no	18.35		128	80	SBP,DBP-HIGH NORMAL	73		0	3	4	7	3
17	male	no	yes	23.89		122	78		74		0	2	2	7	6
17	male	no	no	25.89	overweight	110	70		75		2	4	2	5	7
17	male	no	no	18.38		110	70		76		5	3	2	4	2
17	male	yes	yes	25.6	overweight	130	100	HT	119	PRE DIABETES	2	3	7	7	4
17	male	no	no	18.65		120	74		80		6	1	2	7	3
17	male	no	yes	25.42	overweight	110	70		82		2	2	2	7	7
17	male	no	yes	20.3		120	76		83		0	2	2	7	3
17	male	no	no	24.93	overweight	136	90	SBP-HIGH NORMAL	84		2	1	7	7	4
17	male	no	yes	18.4		116	70		82		1	2	1	7	3
17	male	yes	yes	17.6		116	76		72		0	2	3	7	2
17	male	yes	no	22		118	70		73		6	2	7	4	3
17	male	no	no	23.8		114	74		71		2	1	4	4	4
17	male	no	yes	32	obese	136	98	HT	74		0	1	3	5	7
17	male	yes	no	21.4		116	70		74		1	1	2	5	4
17	male	no	yes	16.3		110	70		74		0	0	7	7	3

17	male	yes	yes	25.8	overweight	110	68		75		2	2	3	7	5
17	male	no	no	26.3	overweight	120	74		76		0	2	7	7	5
17	male	no	no	22.6		120	74		73		0	4	2	5	3
17	male	yes	yes	28	overweight	118	70		74		0	3	2	7	5
17	male	no	no	21.5		116	70		75		0	2	2	7	3
17	male	yes	yes	21		110	66		80		1	1	3	4	3
17	male	no	no	19		110	68		83		1	2	2	7	2
17	female	no	no	18		110	70		85		0	3	4	7	3
17	female	yes	yes	15.64		118	70		83		0	0	4	4	1
17	female	yes	yes	19.11		120	86		82		0	0	7	7	2
17	female	no	no	23.5		110	70		82		0	0	2	7	5
17	female	yes	yes	20.22		110	70		83		0	3	3	7	3
17	female	yes	no	25.2	overweight	120	70		72		2	1	2	7	7
17	female	no	no	19		116	74		73		0	2	7	6	2
17	female	yes	yes	23		116	74		74		1	2	2	5	5
17	female	yes	no	25	overweight	118	70		75		0	3	2	7	7
17	female	no	yes	17		114	70		76		0	3	7	4	2
17	female	yes	no	17		114	70		78		1	3	7	7	2
17	female	no	no	15.38		110	70		75		0	2	4	7	2
17	female	no	yes	22.3		110	72		76		0	1	4	7	4
17	female	yes	yes	23		114	72		74		0	0	7	5	4
17	female	yes	no	19.7		118	76		70		0	2	7	6	3
17	female	no	no	18.65		116	74		70		2	1	5	7	2
17	female	no	no	18.3		112	70		83		0	2	5	7	2
17	female	yes	yes	16		110	70		122	PRE DIABETES	2	1	3	7	3
17	female	no	yes	31	obese	132	90	SBP,DBP-HIGH NORMAL	69		1	3	7	7	5
17	female	no	no	15.4		100	68		68		0	3	5	7	2
17	female	yes	yes	17.53		110	68		72		0	2	7	7	2
16	male	yes	yes	16		100	70		71		3	2	2	4	2
16	male	no	no	21		100	70		79		1	1	3	7	4
16	male	yes	no	17.9		110	70		70		5	0	7	7	2
16	male	yes	yes	16.8		136	94	HT	78		0	3	2	7	4
16	male	no	no	15.07		110	70		77		2	4	2	4	2
16	male	yes	no	17.07		110	70		77		0	1	4	5	4
16	male	yes	no	15		100	70		77		1	1	7	6	2
16	male	no	no	16.27		100	66		69		0	1	3	7	4
16	male	no	no	19.46		110	68		79		2	0	2	7	7
16	male	no	no	17.9		118	72		78		0	0	7	5	3
16	male	yes	no	19.08		116	70		74		0	0	4	7	4
16	male	no	no	15.84		118	70		72		5	2	2	6	2
16	male	no	no	14.88		114	70		73		0	1	3	5	1
16	male	no	no	20.08		120	78		74		3	2	7	5	5
16	male	no	no	20.89		124	78		75		0	1	2	5	4
16	male	no	yes	16.04		118	78		75		5	3	2	7	2
16	male	no	yes	18.2		100	70		74		4	3	2	7	3
16	male	yes	no	27.8	overweight	110	80	DBP-HIGH NORMAL	74		0	3	7	7	5
16	male	yes	yes	19		110	70		118	PRE DIABETES	0	0	4	7	4
16	male	no	yes	17.1		100	70		68		2	1	4	7	2
16	male	no	no	31.2	obese	130	78	SBP-HIGH NORMAL	69		0	4	5	5	7
16	male	no	no	17		98	64		74		2	2	7	5	2
16	male	yes	yes	20.3		118	74		75		0	1	2	7	3
16	female	no	no	16.9		116	70		76		4	2	3	7	2
16	female	no	yes	21		114	70		73		0	2	7	5	4
16	female	yes	yes	18.3		100	66		77		0	1	4	4	4
16	female	no	yes	28.9	overweight	110	68		78		5	4	5	7	6
16	female	no	yes	17.1		110	70		74		1	2	2	7	2
16	female	yes	yes	17		110	70		84		0	1	4	7	4
16	female	yes	yes	16.9		110	70		83		4	2	3	7	2
16	female	no	no	20		110	68		78		1	2	2	7	3
16	female	no	no	23.1		120	66		79		2	2	2	7	4
16	female	no	no	22		100	66		76		2	3	2	7	3
16	female	yes	no	27	overweight	98	64		77		0	4	7	7	7
16	female	no	yes	18.9		98	66		75		4	3	4	7	3
16	female	no	no	16.6		100	70		74		0	2	5	4	2
16	female	no	no	16		110	70		73		0	4	7	5	2
16	female	no	no	17.6		110	74		72		0	1	7	3	2
16	female	no	no	18		110	80		73		2	4	3	7	3
16	female	no	no	15.7		120	80		75		0	3	4	7	1
16	female	no	yes	26.3	overweight	120	86		120	PRE DIABETES	2	2	2	7	7
16	female	no	yes	19.7		118	70		72		0	3	2	4	4
15	male	yes	no	16.6		116	70		73		3	2	2	5	2
15	male	yes	yes	26.4	overweight	114	70		74		0	4	2	7	5
15	male	no	no	15.78		118	70		74		0	1	7	5	1
15	male	no	no	18.38		114	70		74		4	2	4	5	2
15	male	yes	yes	16.7		116	74		75		5	3	7	5	2

				9										
15	male	no	yes	20.72		120	74		76	4	4	3	7	5
15	male	no	yes	18.6		110	68		75	0	1	4	7	3
15	male	yes	no	16.1		110	68		77	4	2	2	7	2
15	male	no	yes	30	obese	130	80	SBP,DBP-HIGH NORMAL	68	2	3	5	6	7
15	male	yes	yes	19.5		110	66		67	0	3	7	5	4
15	male	no	no	17		110	70		69	3	4	6	4	2
15	male	no	no	15.27		114	70		66	0	2	7	7	2
15	male	no	no	15.95		114	70		72	5	1	6	5	2
15	male	no	no	20.22		126	74	SBP-HIGH NORMAL	71	0	2	6	7	4
15	male	no	yes	19		120	74		72	0	1	6	7	3
15	male	no	no	17.7		110	66		73	0	2	7	7	2
15	male	no	no	21		110	66		74	1	1	7	5	3
15	male	no	no	16.5		118	74		75	0	2	5	4	2
15	male	yes	yes	22.1		110	68		76	4	2	7	5	4
15	male	no	no	18.5		110	70		71	5	2	4	7	2
15	male	no	no	17.9		110	70		72	3	2	2	7	2
15	male	no	yes	20.2		110	70		73	1	3	4	5	3
15	male	yes	yes	24	overweight	110	70		73	2	2	3	5	4
15	male	yes	no	17		98	66		74	0	2	2	6	2
15	female	yes	yes	19.4		110	68		75	5	3	7	5	2
15	female	no	yes	15.5		100	68		76	2	2	2	7	1
15	female	yes	no	28.8	obese	100	66		77	0	3	3	5	5
15	female	yes	yes	20.61		98	64		71	0	2	7	7	3
15	female	no	no	24.5	overweight	100	68		72	0	2	2	7	4
15	female	no	yes	18.6		98	66		73	3	3	3	7	3
15	female	yes	no	18.11		110	74		74	1	4	7	7	3
15	female	no	no	23.8	overweight	110	68		75	0	4	3	7	7
15	female	no	no	19.4		112	68		76	1	2	7	7	3
15	female	no	no	18.9		114	68		77	0	1	7	7	3
15	female	no	no	16.06		100	64		78	0	2	2	5	3
15	female	no	no	21		98	64		71	2	2	3	7	4
15	female	no	no	17.08		96	64		72	0	2	2	7	3
15	female	no	no	27	overweight	110	70		73	0	4	3	7	5
15	female	yes	yes	19		110	70		74	2	4	7	7	3
15	female	no	yes	26	overweight	110	70		67	0	3	4	4	6
15	female	no	no	19.8		100	70		68	1	2	7	4	3
15	female	no	yes	20.3		100	66		69	0	2	5	7	3
14	male	no	no	17.1		100	70		66	3	5	6	7	2
14	male	no	no	14.76		100	70		65	0	2	3	7	1
14	male	yes	no	16.9		100	68		67	4	2	7	7	2
14	male	no	no	20.3		126	80	SBP,DBP-HIGH NORMAL	68	5	2	7	7	3
14	male	no	no	18.6		116	70		69	0	2	4	7	4
14	male	no	no	17.5		106	70		65	0	1	4	7	7
14	male	yes	yes	16.4		110	70		66	0	1	3	7	2
14	male	no	no	16		110	70		67	4	0	4	7	4
14	male	no	yes	15		110	70		68	0	0	2	4	3
14	male	no	no	19.05		116	68		69	0	0	2	7	3
14	male	yes	yes	17.08		100	70		70	1	2	2	6	2
14	male	yes	no	28	obese	126	70	SBP-HIGH NORMAL	71	4	3	2	7	2
14	female	no	no	18		110	68		72	0	2	3	6	2
14	female	no	no	14.6		116	74		73	0	3	7	7	2
14	female	yes	yes	18.01		100	70		74	0	2	2	7	4
14	female	yes	yes	25	overweight	104	70		75	0	3	2	7	3
14	female	no	no	17.6		100	68		76	2	3	2	7	3
14	female	no	no	19.9		100	68		77	3	2	2	7	3
14	female	no	no	17.3		108	68		78	2	2	2	7	3
14	female	no	no	16.8		106	68		72	1	2	4	7	2
14	female	yes	no	20.2		126	78	SBP,DBP-HIGH NORMAL	73	0	2	5	7	6
14	female	no	yes	15		100	70		74	3	2	3	5	2
14	female	no	yes	16.5		100	70		75	0	2	2	7	2
13	male	yes	yes	22	overweight	106	66		76	2	2	7	7	7
13	male	yes	yes	17.3		102	66		67	0	4	3	5	3
13	male	no	no	16.5		100	68		68	1	2	4	4	3
13	male	no	no	15.6		110	70		69	4	4	4	7	3
13	male	no	no	15.8		106	68		65	5	2	4	7	5
13	male	yes	no	19.5		108	68		66	0	2	7	7	3
13	male	yes	yes	16		100	70		67	4	2	4	7	2
13	male	yes	yes	17.3		100	70		67	1	2	3	7	3
13	male	no	no	23.4	overweight	110	70		68	0	2	4	7	7
13	male	no	no	19.4		110	70		69	5	4	3	7	3
13	male	no	yes	16		110	70		65	2	2	7	7	3
13	male	no	no	19.5		100	68		78	2	2	2	7	2
13	male	no	no	18		98	68		76	2	2	2	7	2
13	female	no	yes	25	overweight	98	68		75	0	2	2	7	2
13	female	no	yes	17		100	70		74	0	3	2	7	2
13	female	no	no	21		106	66		73	0	2	1	7	3
13	female	no	no	23	overweight	104	68		72	1	2	2	7	5
13	female	no	no	20.5		100	66		78	3	1	3	5	3

13	female	no	yes	17.7		98	66	79	0	2	4	7	2
13	female	no	no	15.3		98	64	84	2	1	5	7	2
13	female	no	no	18.4		96	66	85	1	1	4	7	3
13	female	no	no	16.06		100	72	88	3	2	5	7	2
13	female	yes	yes	18.1		98	68	82	0	4	5	7	3
12	male	yes	yes	17.1		98	66	89	0	3	7	7	2
12	male	yes	no	16.7		100	68	86	0	2	4	7	3
12	male	no	no	16		100	70	84	5	1	3	7	2
12	male	no	no	19.3		100	70	94	5	1	5	7	7
12	male	yes	yes	22	overweight	100	68	93	0	3	4	7	5
12	male	no	no	17.4		98	68	92	0	2	7	7	3
12	male	no	no	19		96	66	65	0	2	2	5	2
12	male	no	no	16.3		100	70	67	0	2	2	6	2
12	female	no	yes	17.4		96	68	73	2	2	2	4	2
12	female	no	yes	19		98	66	72	2	2	4	7	3
12	female	no	yes	15.3		98	70	69	0	2	5	7	2
12	female	yes	no	17.4		100	66	66	2	2	2	7	2
12	female	no	no	20		100	68	72	2	1	7	7	5